



85 Million Years Ago!

Monster Wildlife of Kansas

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*Once covered by an immense ocean,
parts of Kansas hold mysterious secrets in the form of ancient fossils.*

There are fossil whisperers. For some rock hounds, the graveyard of the very distant past seems to call to them –. “I am here,. I am here.” And the fossil whisperer hears. Whether following them around like a Lab puppy or reading about their exploits in old journals, I find them fascinating. Of course, one eventually realizes that the knack for fossil finding is mostly an acquired skill — refined by thousands of back-breaking hours scouring geologic formations for the slightest irregularities. Just like trying to find morels, points or sheds, you develop skill by doing.

George F. Sternberg was a fossil whisperer. So was his uncle and namesake, Dr. George M. Sternberg, his two brothers, and his dad, Charles H. Sternberg. The Sternbergs searched much of the western United States and Canada for many kinds of fossils, including dinosaur bones. The Sternberg Museum of Natural History at Hays stands as testament to George’s life-long “hobby job.” It houses many of the fossils of ancient fish, reptiles, pteranodons, birds, and invertebrates that George and his family uncovered in the world famous Niobrara Chalk of Western Kansas.

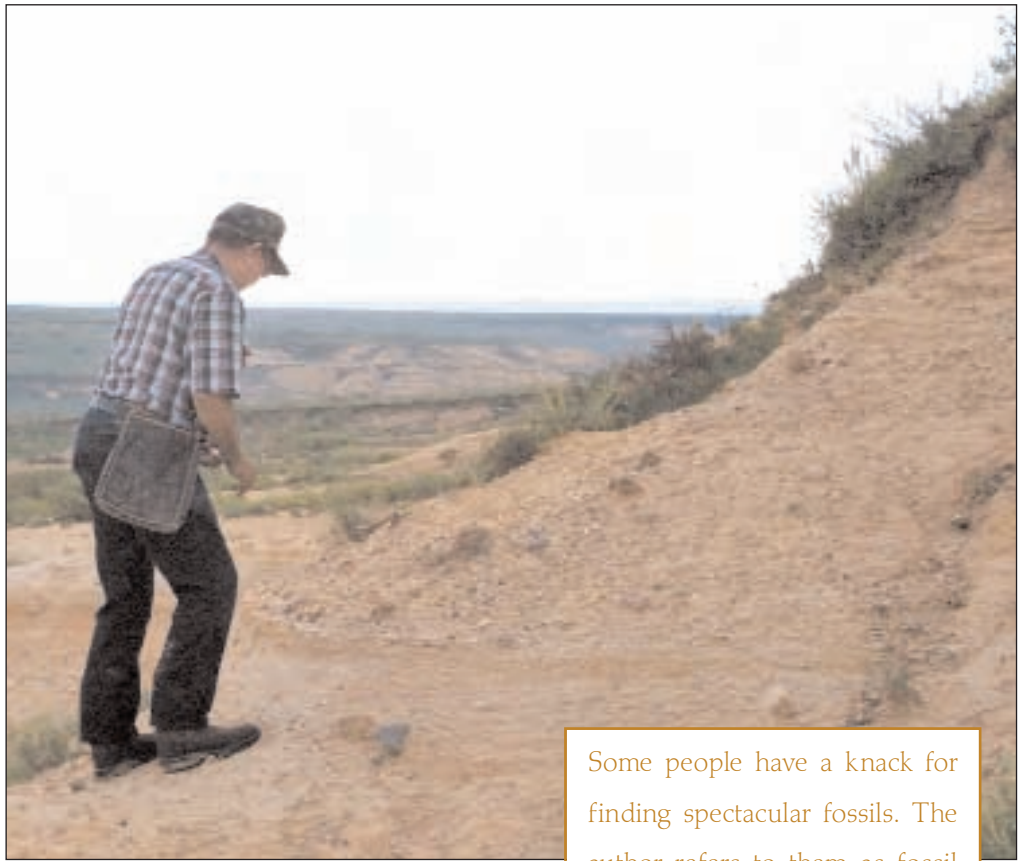
The Chalk is a paleontological heaven for fossil whisperers. Specifically, the Chalk is made up of the calcium carbonate shells of trillions of single-celled algae that were deposited from the Cretaceous ocean 82-87 million years ago.

After the Civil War and while Plains Indians still threatened isolated settlers and railroad workers, some explorers were looking for fossils while constantly checking horizons for unwanted visitors. One of the first major discoveries of a large vertebrate in the Chalk

was by Dr. Theophilus Turner, a military surgeon at Fort Wallace. He discovered an Elasmosaurus, one of the long-necked plesiosaurs, in 1867, and later shipped it to Edward Cope of The Academy of Natural Sciences of Philadelphia.

At the time, it was the largest and most complete plesiosaur skeleton found on the continent and the first Cretaceous vertebrate from Kansas. It was a big deal. Cope had originally mis-positioned the skull on the end of the tail, being somewhat misled by the original location lie of the skull bones near the tail of the fossil. This led to some quite normal scientific correcting as his mentor, Dr. J. Leidy, pointed out the mistake along with one of his own related to another fossil. (see <http://www.oceansofkansas.com/tale-tail.html>) But, this was the opening act to an incredible Chalk fossil race. It commenced with a mad dash to the Niobrara Chalk by early-day paleontologists with names such as O. C. Marsh, B. F. Mudge, and including Edward Cope. Charles H. Sternberg, George's father, was employed by some of these paleontologists to find fossils.

Although other western states such as Utah and Wyoming would become the focus for dinosaur hunts, the Kansas Chalk was THE place to find giant sea monster fossils. These included the long and short-necked plesiosaurs, horrific mosasaurs, and huge sharks. In the later Mesozoic



Some people have a knack for finding spectacular fossils. The author refers to them as fossil whisperers – the fossils talk to them and they hear.

Era, while much of the rest of the Americas harbored giant land dinosaurs, Kansas's surface (and most of the Midwest) was indeed "flatter than a pancake." It was as flat as an ocean gets and it harbored the most fierce sea monsters imaginable. Perhaps the most formidable was the toothy Tylosaurus prori-

iger, a 30-foot reptile-like mosasaur. Another was Cretoxyrhina, an 18-foot shark and a terror of the Cretaceous seas. It and many other shark species left evidence all over western Kansas. You can't go to any small town in western Kansas near the Chalk without running into a local shark tooth enthusiast. Their collections range from the classic coffee table discussion pieces to the amazing museum displays of the Fick Fossil and History Museum in Oakley



Ancient oysters congest a layer of Smoky Hills chalk in this typical Kansas fossil.

Mike Everhart and Leeann Brunson check a piece of fossilized mud near Belvidere.

(<http://www.kansastravel.org/fickmuseum.htm>), a must-see for any tourist looking for the unusual. Another interesting stop is the Keystone Gallery (<http://www.keystonegallery.com/>) halfway between Oakley and Scott City. Many interesting fossils and sharks' teeth there will enthrall the visitor. The realization that all these teeth once scoured the Western Interior Sea for prey is enough to make your toes a little tingly walking the ancient sea beds.

While not as common as rocks, multitudes of sharks' teeth in the Chalk are enough to give ample testimony to some very different ancient times on the Kansas plains. Finding an 85 million-year-old shark's tooth, one cannot help but wonder about its presence on the prairie. Mike Everhart, a retired Boeing environmental manager and fossil expert, picked up an even older tooth recently in the black Kiowa shale in Kiowa County. To me, this was absolute evidence that some gifted observers have fossil radar. Everhart immediately knew the tooth. He casually stated, "It's from a *Leptostyrax*. See how long it is, and angular. It sat in the jaw like this." He holds the tooth in a forward, jutting position as if he played the shark's maw in pursuit of the hapless prey. The tooth glistens as the simmering sun bakes us, reminding us of the austere lack of surface water compared to eons past. This old sea bed, predating the Chalk by



25 million years, yields fewer shark's teeth and other vertebrate fossils but is similar in the extensive amount of oysters, snails, clams and other invertebrate shells protected in its Cretaceous vault.

The Kansas Chalk is more extensive though, 600 feet thick in some places. It's a faithful record of five million years of deposition that's really hard to conceive for humans with average life spans of around 80 years. Occasionally, a giant *Xiphactinus* fish or some other creature would die, and end up on the bottom sediment, get covered and be "lucky" enough to have its bones preserved where

a modern day fossil whisperer would hear it calling. Thusly, the fate of one of the world's most famous fossils came to be and was collected by George F. Sternberg.

Sternberg recovered the incredible "Fish-within-a-fish" fossil in 1952. There was a bonus to this 14-foot *Xiphactinus*. A pint-sized 6 six-foot *Gillicus* was quite perfectly oriented head-first into the gut of the larger predator. While fossils found by the Sternbergs ended up in over 50 museums and universities around the world, Sternberg wanted this special one to stay at his namesake museum. All Kansans should see this incred-

ible display, as well as other amazing fossil finds of the Niobrara Chalk. Gazing at the giant mosasaur or Fish-Within-a-Fish fossils at the Sternberg Museum can yield spine-tin-gling imaginations.

There were other giants of the Cretaceous seas of Kansas. The giant turtle, *Protostega gigas*, had a shell that was seven feet long. Large clams, squids, and plesiosaurs lived in the Western Interior Sea. There are billions of smaller creatures, whispering their fate in their chalky mausoleum.

Since Cope, Marsh, and the Sternbergs, there certainly have been other fossil hunters. Current day whisperers include Robert Scott who wrote of the invertebrates of the Cretaceous in 1970. Before him, Bruce Latta published on some of the interesting paleontology of the very early Cretaceous sea. The



most recent, notable fossil whisperer is Everhart, who has moseyed around the Chalk, finding cool stuff for over three decades. Currently Past-President of the Kansas Academy of Science, and co-editor of the *KAS Transactions*, he has recently published an amazing work, *Oceans of Kansas – A Natural History of the Western Interior Sea* (s e e

Cretoxyrhina, an 18-foot shark and a terror of the Cretaceous seas and many other shark species left evidence of their presence all over western Kansas – shark teeth.



<http://www.oceansofkansas.com>). This is a marvelous account of the sea monsters that once roamed Kansas. I followed Everhart around last summer in deposits of what is considered the near shoreline of that old sea, where some rocks are solidly packed with fossil oyster and clam shells. We were looking for gastroliths or “stomach stones” similar to gizzard stones of some modern day birds. I’d occasionally seen them before, regarding them as polished river stone washed from the Rocky Mountains from some of the extensive Pleistocene deposits of eons ago. Coming across dark polished chert rocks of about an inch and a half in diameter, Everhart said: “Look at the conchoidal fractures in those rocks. They are an indication of these rocks at one time being crushed together in the stomach of plesiosaurs of the Western Interior Sea.”

Plesiosaurs are the giant fish-eating beasts upon which tales such as the Loch Ness Monster are based. Some were short necked, and some had long necks with relatively small heads compared to a bulbous body adorned with four flipper appendages. Everhart writes with a kid-like enthusiasm as he starts his book with a vivid account of life and death encounters between prey and a menacing mosasaur. When he discusses gastroliths, he unveils that scientists disagree over the purpose of these fascinating rocks. Most recent evidence indicates that whether used as ballast, taken in through accidental feeding, or for purposes of grinding food, a 1992 fossil find in Logan County



strongly suggests that plesiosaurs used them to help demolish harder prey parts in their gut.

I stare at the piece of polished chert in my palm, as it whispers to me through its telltale, curved cracks. My mind wanders to an incredibly distant past, when true sea monsters hunted here. Closing my eyes, I envision a relatively calm day on the flat water of Kansas. A few schooling *Gillicus* scatter, portending the arrival of a huge plesiosaur. A colossal shark erupts from the shadowy depths, chomping down on the hapless “Nessie.” Razor sharp teeth from the giant *Cretoxyrhina* dislodge in the struggle, flittering to the sea bottom. The teeth settle in the soft substrate, to be covered by sediment and ultimately “saved”

for the modern day CSI (Chalk Scene Investigator). What a continual, dramatic wild theater of life and death it was. All of that life died regularly, including the giant monsters, leaving fossils of different ancient ages to whisper to us on this very different landscape. While later Pleistocene mammoths and saber-toothed tigers may have seemed impres-

sive, nothing in and of Kansas ever compared to the spectacular monsters of the deep Cretaceous Sea. That legacy is an incredible and internationally famous resource for Kansans to more fully realize and appreciate. What wildlife! What a time! 🦕

For additional reading about the amazing ancient history of Kansas, try *Kansas Geology* edited by Rex Buchanan (1984) and *Roadside Kansas* by R. C. Buchanan and J. R. McCauley (1987). For more information on interesting places to see current and ancient wildlife of western Kansas, go to NaturalKansas.org.