

Fossils In North Dakota

You have just picked up the first issue of FIND, a newsletter dedicated to helping young readers express their love of fossils and paleontology, and to learn more about the world under their feet. Each issue will be broken up into sections including Feature Fossil, Travel Destination, Reader Art, Ask Mr. Lizard, and more!

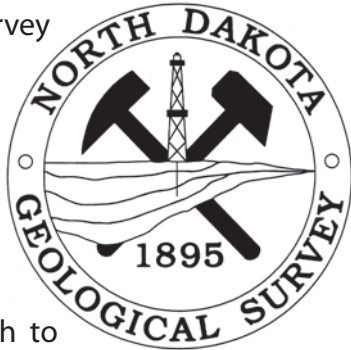
Summer 2011, No. 1

Editor: Becky Gould
North Dakota Geological Survey
600 East Boulevard
Bismarck, ND 58505

bgould@nd.gov

Next Issue: September 2011

Please e-mail us if you wish to receive the electronic version of FIND.

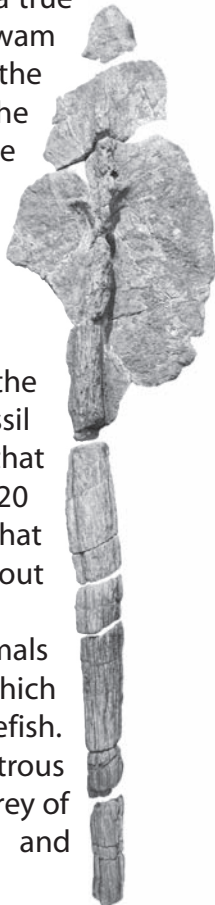


Feature Fossil: *Tusoteuthis*

Tusoteuthis was a terror of the seas, a true monster of the water. This giant squid swam through warm shallow seas across the eastern part of North Dakota during the Cretaceous Period, eighty-five to sixty-five million years ago. Even though they were **invertebrates** (didn't have a backbone), they had a rigid internal support called a **pen** bone, or **gladius** (blade) and **rachis** (shaft).

One such fossil was found in the in the northeastern part of the state. The fossil measured about 6 feet (1.8m) long - that would mean the animal was easily 15-20 feet long, from head to tentacles. That particular animal was only about three-quarters grown!

Tusoteuthis was from a class of animals called **cephalopods** ("head-foot"), which includes other squid, octopus, and cuttlefish. Even though they could grow to monstrous proportions, they were still a common prey of other sea creatures, including sharks and mosasaurs.



Travel Destination: Pembina State Museum

The Pembina State Museum, located in Pembina, ND, houses exhibits examining local history that goes back millions of years. A permanent exhibit includes Cretaceous age fossils from sharks, fish, squid, mosasaurs (marine reptiles), and sea birds. Other exhibits contain information and artifacts from the last Ice Age, fur trapping and trading, and more.

Surrounding areas such as the Pembina Gorge hold some of the oldest rocks and fossils in North Dakota. Most of these rocks are covered by glacial and lake deposits, but road cuts, gravel pits, and river erosion have exposed them.

Many areas are owned by the State, so collection of **vertebrate** (with a backbone) fossils is prohibited without a permit. The North Dakota Geological Survey runs occasional digs nearby, so keep tuned-in for the opportunity to volunteer.

The Pembina State Museum is located off of Interstate 29, Exit 215. They are open year round with free admission. For more information, see:

<http://history.nd.gov/historicsites/pembina/index.html>

Ask Mr. Lizard

When you find a bone is there anything inside of it anymore? - Thomas E., Age 6

That depends on what kind of a fossil bone it is. Sometimes a bone is **permineralized**, which means that when it turns to rock, all the hollow spots are filled with minerals or crystals. Some bones have even been turned into opal!

If a bone has been **replaced** (original material is gone) when it turned to rock, then all the bone marrow and spaces inside are preserved.

What colors were most dinosaurs? How can you tell? - Samantha E. Age 4

For most dinosaurs, even if we find the skin, we don't know what color they were. To guess, we look at birds and reptiles that live today, and use similar colors.

Ask Mr. Lizard (continued...)

Some very rare fossil dinosaurs have been found with feathers, and by looking at those feathers under a high powered microscope, we can actually see what colors they used to be – including black, white, brown, or orange. Some even had stripes or spots.

Reader Art

We want YOUR artwork! Please e-mail us a digital copy, or mail your traditional art (that you don't want returned) to our address in Bismarck, ND (see page 1).



Nick Crommett, Age 9

Just Imagine...

Tusoteuthis glided through the warm sea with ease, its body smooth and streamlined. Eight great arms, and two tentacles preceded a hooked beak, and eyes the size of dinner plates. Two soft triangular wing-like fins extended off the back of the mantle (body), undulating as it moved.

Sunlight filtered through the water, sending dancing lights across the surface of the squid. It was on the hunt, approaching a favorite coral reef hunting ground. Once there, it would lie and wait, its skin changing color and texture to blend into the rock and coral. Nearly invisible, all it needed to do was remain still until a tasty crab or unwary fish came to close... then... its arms would lash out to catch dinner.

A shadow moved through the water above the *Tusoteuthis*, disrupting the sunlight. Another predator made its move, slicing through the water, grabbing hold of a squid arm with thick conical teeth. The mosasaur shook its body back and forth, attempting to make the squid into a meal itself! Tentacles wrapped around the mouth and head of the mosasaur – *Tusoteuthis* won't give in without a fight. It never would have made it to a mighty 25 feet in length if it hadn't learned a few tricks. With suckers and arms over its eyes, the mosasaur was blind. It began to panic, thrashing. Mosasaurs were air breathers, and it was losing precious oxygen on what was supposed to be an easy meal. The squid arm ripped free, and the now loose squid blanketed the area with ink before jetting backwards away from the other predator.

The mosasaur headed to the surface, its head covered in lacerations from the squid suckers. *Tusoteuthis*, while missing part of one arm, was alive to hunt another day. Luckily, given enough time, the arm would grow back.

Special Interest:

Which Fossils Can I Collect?

Many places around the United States you can collect and keep any fossil you find. However, here in North Dakota we try to protect those fossils where we can. You can collect on privately owned land as long as you have the land owners permission. Public land (preserves, natural parks, etc.) is owned by the State, and the fossils found on that land need to end up in Universities or museums for everyone to see.

It may sound a little disappointing, but imagine what would happen if everyone collected the fossils they found, keeping them at home. No one would ever get to see them, and if it was a new plant or animal, no one would ever know. Each fossil is a piece of North Dakota's past, filling in the puzzle of what used to live here.

What should you do if you find a fossil? Tell us! Many of the fossil finds that are collected by us are found by readers like you - walking around, hiking, camping, and suddenly seeing something that looks *different*. Take photos, write down as much information as you can about where you found it, and what it looks like, but don't collect it. Part of our job is to examine possible fossil finds, and collect them if they are important. Your name could end up next to that fossil on display!