

Fossils In North Dakota

FIND is a newsletter dedicated to helping young readers (in age or spirit) express their love of fossils and paleontology, and to help them learn more about the world under their feet. Each issue will be broken up into sections including Feature Fossils, Travel Destinations, Reader Art, Ask Mr. Lizard, and more!

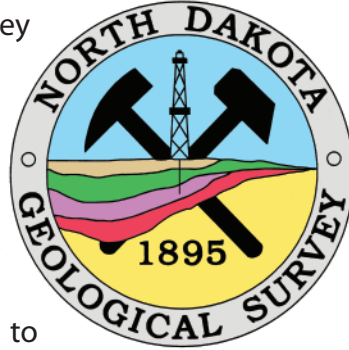
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2023 Public Fossil Dig Recap

It was a good year for the summer fossil digs. We were able to go back to the Dickinson area, which gave us a total of four public fossil dig sites this year. Our first two digs of the season were Medora and Dickinson, both held in June. July held the Bismarck area site, and our Pembina Gorge dig was in August. Some days were great – some days we were rained out – and some days we were just about blown off the hill by wind!

Medora – June 15-23

We've been on the search for an elusive *Champsosaurus* for the last few years, so we took the opportunity to dig right into the area of highest concentration from past years. A number of elements were uncovered, including more vertebrae and ribs. A smattering of small specimens from other creatures were also recovered, such as crocodile teeth, fish vertebrae, and osteoderms (crocodile skin armor). Sadly we lost the last few days to rain that just wouldn't leave us alone.



Champsosaurus rib



Above: first day on the Medora site!
Below: participants hiding from the wind and mist.



Right: first timer on the Medora dig site found a nice looking crocodile tooth.

Below: nice sized fish vertebra from the Medora site.



Dickinson – June 26-30

This was our first year back at the Dickinson site since 2019. It's a great spot for prospecting and picking up small stuff, and we had done such a good job in the past years that pickings were slim. We needed to let it rest, and allow Mother Nature to erode out some new material for us. This year we continued finding small mammal teeth and jaws, as well as larger *Subhyracodon* (hornless rhino) bones.



Above: visiting researcher Dr. Bill Korth from the Rochester Museum & Science Center in New York joined us for most of the Dickinson dig. His specialty is in small mammals. Intern Hannah Maddox (yellow shirt) searches nearby.

Below: two small teeth hiding in sandy matrix.

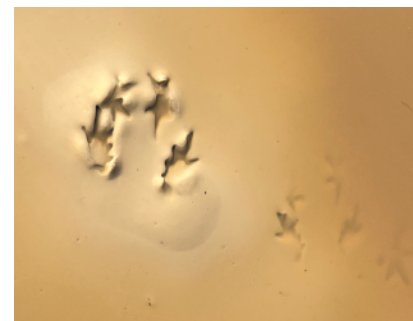


Bismarck – July 10-August 4

We're working hard on getting through the last of "blueberry hill" at the Bismarck site. We tried to have as many people work on that as possible, with overflow working on the rear quarry wall. *Edmontosaurus* skull bones were found right next to foot bones – it's always amazing how jumbled up everything in the site is. There were some very hot days out there this year, mixed in with a couple of rain days. There were SO MANY toads at the site! We had to watch our step to make sure we didn't squash any.

Right: small *Tyrannosaurus* tooth (~2.5" long).

Below: sad *Edmontosaurus* metatarsal (foot bone) - the darker color is due to the addition of stabilizers to help hold all the pieces together in the field. It's not a pretty bone... but it was identifiable!



Above: With all the rain we've been having the frogs and toads were in abundance on site. At left is the most common visitor - a Woodhouse's Toad (*Anaxyrus woodhousii*). At right were footprints left behind in a puddle on site.

Other visitors to the site included Leopard frogs, brown-belted bumble bees, two-striped grasshoppers, darkling beetles, rock wrens, kingbirds, and mule deer - just to name a few!



Above: Intern Hannah Maddox was a good sport about everything - even days and days of plaster.

Pembina Gorge – August 11-20

The Pembina Gorge took the cake this year. While we didn't get the Big Fish out (lovingly nicknamed Jimmothy), we found so many good bones... including our very first plesiosaur from the site! We knew they were in the area, because different landowners would come by with pieces they had found for us to identify – but this was the first one from the public dig site. Bird bones were also in abundance, with two large (different individuals) tarsometatarsal bones (fused ankle/foot) and a few vertebrae. Poacher Hill continued to produce fish material, with some vertebrae as small as a seed bead, and others larger than a quarter.



Clint adding rebar supports to Jimmothy's jacket.



Above: our first plesiosaur bone - a vertebra! Mosasaur vertebrae are procoelous (concave on the front, convex on the back) - while plesiosaur vertebrae tend to be slightly amphicoelous, (concave on both front and back).



Above: two tarsometatarsus - the fused ankle / foot bones found in birds. These two belong to a marine bird such as *Hesperornis* or *Baptornis*. We'll need to clean them up carefully for a better identification. All the bones from the Pembina Gorge site are preserved with gypsum, which is very soft, and delicate to clean.

V.I.P. (Very Important Paleontologist) Melanie During

I am Melanie During, I am a PhD candidate in Sweden. I obtained my undergraduate and graduate levels in Amsterdam where I did research projects on fossil footprints and geochemistry. I still live mostly in Sweden, but recently my family has moved back to the Netherlands and I am now going back and forth.

Sweden and the Netherlands is awfully far away - what brings you to North Dakota?

As I am trying to understand the extinction of the dinosaurs better, North Dakota is a great place for me to be. A few years back I studied fishes from North Dakota that died on the day of the impact. I studied these fishes and reconstructed the season in which the meteorite struck by studying their bones. The meteorite struck in spring. There are so many outcrops of the boundary and I am here to look at most of them in hopes of finding direct victims of the impact. If I can study the impact in a lifetime of individual dinosaurs then perhaps we can better understand why it is they died out.

What made you decide to study Paleontology?

Growing up in a part of the Netherlands with very few fossils, this was not a likely career outcome for me. However there was a gravel path that they deposited new shells on when I was around 7 years old. I walked past these and immediately was intrigued by their coiled shapes and beautiful dull blue hue. When I started looking them up in the library, I discovered that these were fossils! An obsession was born.

Do you have a favorite dinosaur / fossil?

I actually do not! I love all dinosaurs and marine reptiles equally. Please don't make me pick!

There are so many ways to be involved with paleontology - fieldwork, labwork, research, etc.. Do you have a favorite aspect of paleo?

I enjoy fieldwork most! Second place however goes to

synchrotron (high resolution CT) scanning! Being able to digitally look inside the rocks and see into the cells of bones is so wonderful and teaches us so much!

Not everything is as easy as they make it seem in the movies - what difficulties have you found as a paleontologist?

It can be quite challenging to find a job in paleontology, sometimes you'll need to relocate to a different country or state for the job you love. This can certainly be challenging.

Do you have any advice for our aspiring young readers?

If you're passionate about something, then go do it. Don't be afraid to stand out or be different - they just might be the qualities that end up making you successful!

