

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!

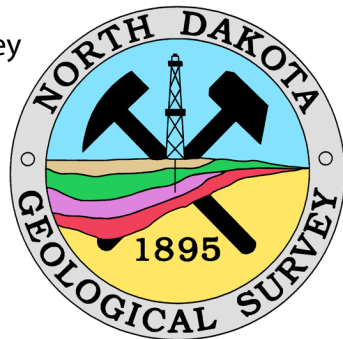
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2025 Public Fossil Dig Review

We welcomed 415 participants this year on the Public Fossil Digs. With their assistance we were able to find and recover 85 plaster jackets full of fossils, along with dozens of smaller fossils that were collected in baggies. We hosted our first partnership with the Sternberg Museum Science Camps, welcoming nine high schoolers from across the country for a two-week fossil dig at our Bismarck site. While rain and damaging storms did cause some problems throughout the summer, we worked through it and made some great discoveries!



Above: The Sternberg Museum Science Camp digging at the Bismarck site!

Bismarck

After 15 years of dedicated service to the NDGS Paleontology public fossil digs, our sturdy shade tent was forcibly retired in July. As a result of a very stormy day, we returned to check on the site to find the tent in tatters and the support poles bent and twisted. We look forward to a new tent for the 2026 season, but we are sad to see the old one go.



Above: Our beloved shade tent in its prime.

Below: One of the shade tent's poles bent 90° by the wind.



Despite that setback, we recovered some beautiful dinosaur bones and a few large tyrannosaur teeth this summer. We've finally gotten a relatively straight back wall established at the site, making it easier to supervise work at the site.



Above: Sternberg Museum Science Camp participant uncovering a tyrannosaur tooth.

Medora

We returned to our Paleocene (approx. 60-55 million years old) site in Medora. The dig included the summer biology students from Century and Bismarck High Schools as well as the public fossil diggers.



Overall a great dig! We removed 27 jackets this year with a mix of champsosaur, crocodile, turtle, and (of course) coprolites. Though there were very few rain days, the van got stuck at the top of the hill near the site on a particularly wet day and had to be abandoned.



Above: In addition to the tyrannosaur teeth, a large and especially well-preserved croc jaw was found!

Below: The croc jaw next to a tyrannosaur tooth.



Above and below: Public Fossil Dig Participants and their finds in Medora!



Pembina Gorge

Fish, fish, and more fish! Aside from some loose mosasaur teeth, all of our jackets contain fossil fish material! One notable fish was found by Clint on the first day when we were opening the site, cutting a path to the quarry. It's a fully articulated fish tail! Aptly named "Tailor," the fins of the tail are approximately 8" (20cm) long with more than a dozen vertebrae!



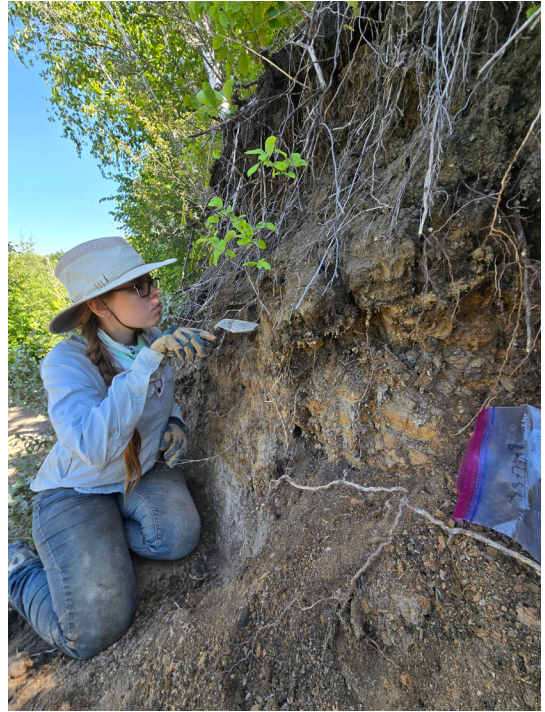
Above: A photo of "Tailor." This fish tail was very promising. The fin is in excellent condition with articulated vertebrae. Unfortunately, the fossil ends part way up the spine. The rest of the body is likely lost to the gorge.

One of the diggers, Joanne, found a rather large mosasaur tooth! She also found some small pieces with an interesting texture which turned out to be a type of giant clam!



Above: Two fragments of the giant clam. Notice the parallel striations along the edge.

We had a very special guest while digging in Pembina Gorge: Amelia Zietlow, who helped describe the mosasaur *Jormungandr walhallaensis*, joined us in the field for five days! Amelia found a variety of fish bones including a jaw.



Above: Amelia Zietlow digging at Pembina Gorge.

We also had a lot of critter visitors at the site! By far the cutest was this vole, a small rodent. It popped down from the top of the hillside to where we were digging. It was gently scooped up and relocated a safe distance away.



Above: Our vole visitor in a scoop.

V. I. P. (Very Important Paleontologist)

Alex C. Gardner

Hello everyone! My name is Alex, and I'm the newest member of the NDGS Paleo team! I'd like to tell you about my background, how I got into paleontology, and what I'll be doing with the team.

I didn't really have a dinosaur phase as a kid. Paleontology wasn't on my radar at any point in my youth. I went through many phases, as lots of people do; I wanted to be a nurse, a veterinarian, a forensic scientist. The list goes on. It wasn't until college that my "a-ha!" moment hit.

I went to college at Western Illinois University. They have a forensic chemistry program that I was interested in. Unfortunately (or fortunately, in hindsight), part way through my first semester, I realized that chemistry and I do not get along. Despite constant effort, and lots of help from the TAs, I just could not get a handle on the concepts. By mid-October, I had no direction. Chemistry wasn't going to work out... now what?

In my second semester, one of my professors talked about a dinosaur dig class he runs every summer. He worked with the Burpee Museum of Natural History in Rockford, IL at their Morrison Formation dig site in Utah. I thought it sounded like a fun experience, so I signed up. At this point I hadn't taken any Earth science classes, not even in high school, so the learning curve was rather steep. I didn't know much about dinosaurs either. My points of reference were Jurassic Park and Land Before Time! In May, we set course for Utah.

During this dig class, I got the full hands-on experience digging bones, making plaster jackets, flipping bones out of the ground, and so on. I'm not sure which moment caused the epiphany, but before the two-week dig was over, I knew this is what I wanted to do! I like to say that paleontology found me because I didn't even think to look here! A few of the other participants in the class were advisees of my professor, also going into paleontology, and they told me how to adjust my major and what classes to take. By August, I swapped my major to Geology, started taking geology courses, and was on my way to becoming a paleontologist! I didn't know what I wanted to *do* as a paleontologist yet, but I knew that this is what I wanted to *be*.



Above: A photo of Alex (left) on their first fossil dig working on a dinosaur humerus. Their professor, Dr. Matthew Bonnan (right), is why Alex got into paleontology!

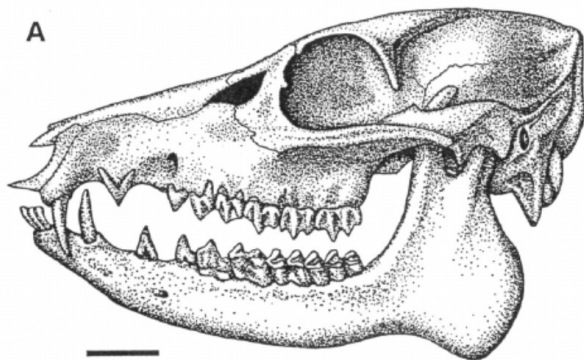
No journey would be complete without a few bumps in the road. As I neared graduation from WIU, I applied to a few graduate schools in the hopes of working towards my master's degree. I didn't get in anywhere! I would have to wait for the next year to try again. Geology field camp wrapped up in the summer of 2012 and I got myself a retail job to save up some money. I wanted to make sure I had more paleontological experience under my belt, so I also reached out to the Burpee Museum about volunteering in their lab. Even though I had never prepared a fossil up to this point, they were kind enough to take me in and teach me fossil preparation techniques. During my year "off" from school, I learned how to use an air abrasion machine, air scribes, and manual tools. It was during this time at the Burpee that I figured out I wanted to be a fossil preparator. I really enjoy seeing the progress of a specimen from start to finish and all the work that goes into it.



Above: Alex volunteering in the lab at the Burpee Museum. This jacket was chock full of *Diplodocus* bones!

In October of 2012, I attended my first SVP meeting. This is an annual conference for vertebrate paleontologists to meet and share their research. I had one goal in mind: find a graduate advisor. I figured part of my problem in not being accepted to a graduate program was I'd never met any of these advisors before – they had no idea who I was. I met several people on this trip, including Clint Boyd. Clint had just graduated with his PhD and was seeking students to advise during his post-doc at the South Dakota School of Mines and Technology. I applied to the SDSMT master's of paleontology program and was accepted!

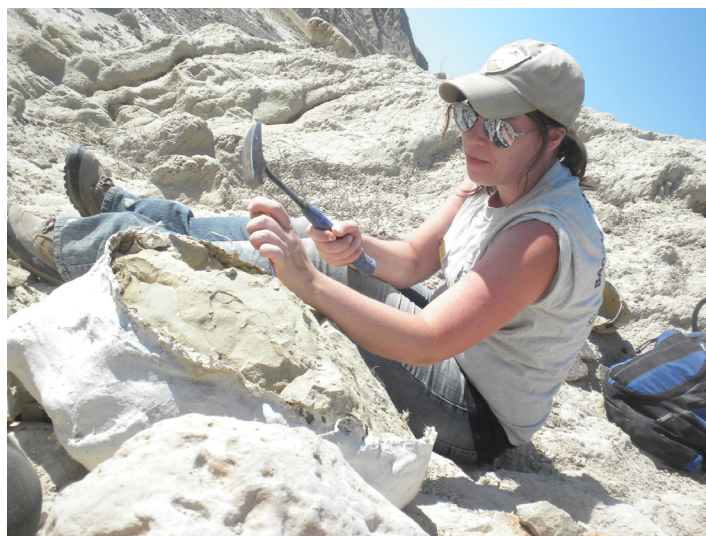
My thesis topic revolved around a group of small deer-like animals called hypertragulines. This group has many species described but little consensus about their relationships and to which genus each species belongs. My thesis analyzed several hundred specimens in order to answer those questions. These are found in the same age rocks that NDGS Paleo digs in Dickinson.



Above: An illustration of the skull of *Hypertragulus calcaratus*.

I learned more fossil preparation techniques during my time at SDSMT and I went on to work with several institutions doing fossil preparation, field work, and outreach. I've worked with: Badlands National Park, Wind Cave National Park, NDGS Paleontology as an intern, the United States Forest Service, the Children's Museum of Indianapolis, and the Mammoth Site of Hot Springs, SD.

Each of these places taught me something new, adding to my tapestry of experience in paleontology. Now working with NDGS, my job is three-fold: I handle the public fossil digs, manage the social media and outreach, and prepare fossils in the lab. I really enjoy that my job is varied. Every day is a little different! I really look forward to the new experiences that this position will bring. Hope to see you in the field!



Top: Alex at Badlands National Park as an intern chipping away rock matrix from a large fossil tortoise.

Bottom: Alex presenting a poster at the Association for Materials and Methods in Paleontology conference in 2025.