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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https://www.dmr.nd.gov/ndfossil/kids/

2018 Public Fossil Digs

This will be a record year for the NDGS paleontology program. Because of the national media coverage we received last year (New York Times, Today Show, etc.), our waiting list was huge, and we filled 90% of our dig slots within two hours of opening registration. Crazy!

We will be returning to four sites this year, with extended dates on all in order to try and squeeze in as many people as possible.

Dickinson Area, June 20-29. This site contains Oligocene aged material (~30-35 million years old), which we call our ND Savanna. A drier environment populated by many animal lineages still alive today (deer, horses, felines, canines, rhinos, fish, bats, etc.).

Medora, July 10-15. An area with attractions for all, we will continue working on our Paleocene quarry (~60-65 million years old). We call this area our ND Everglades, filled with swamp denizens such as crocodiles, fish, turtles, lizards, birds, and salamanders.

Bismarck Area, July 16 - August 4. This is our one Cretaceous aged, Hell Creek Formation site (~67 million years old) where you will have a chance to excavate dinosaurs. This is looking like it used to be a bend in a river, where animal carcasses washed up and were fed on. Lots of bones, and many shed *Tyrannosaurus* teeth.

Pembina Gorge, August 7-14. Also Cretaceous aged, however we will be once again working in the Pierre Shale that once was the bottom of the Western Interior Seaway (~80 million years old). The creatures at this site include monstrous marine reptiles such as mosasaurs, as well as fish, bird, and squid.

Ask Mr. Lizard

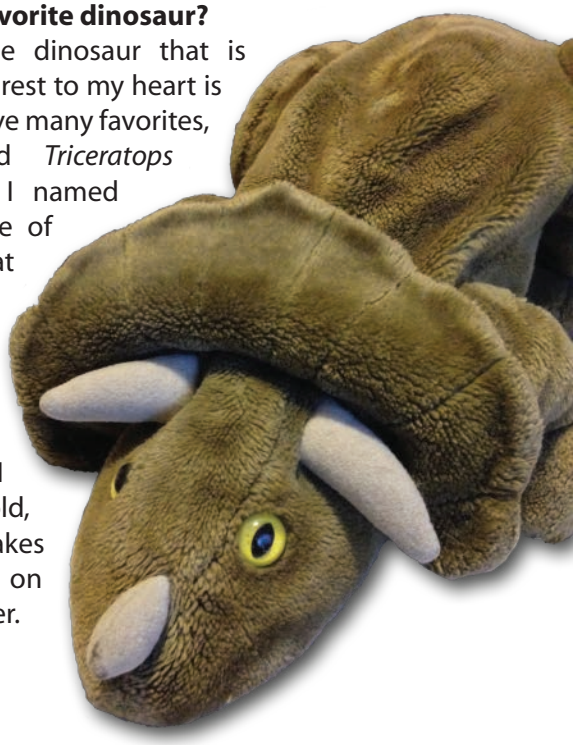
Why did *Tyrannosaurus* have such small arms?

That's a deceptively complex question - I wish I had an easy answer! *Tyrannosaurus* is at the end of a very long evolutionary line - one you might say that went back to the beginnings of Life. An animal doesn't get to choose if it has big arms, or small teeth, or armor, or wings. Instead something we call Natural Selection does the, well, selecting. The world around us, the environment, has certain pressures, and the plants and animals that are best suited to survive and multiply in those environments are the ones that leave descendants behind. You wouldn't find a bat deep-sea diving - it doesn't have the right body parts. Similarly, you wouldn't see a *Tyrannosaurus* trying to fly - it didn't have wings.

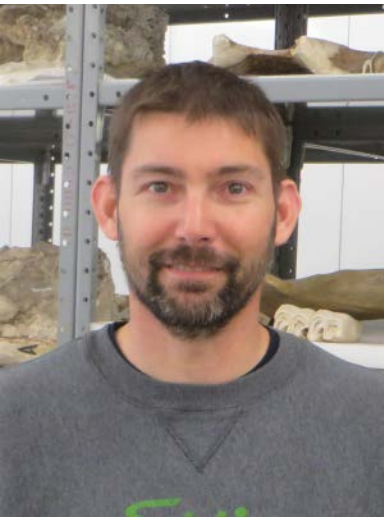
The first tyrannosaurs had smaller heads and larger arms. As time went on, their heads became larger, and their arms became smaller. The big question in Why? Not having lived during the time of dinosaurs, we can only guess. However, a good guess is that whatever lifestyle *Tyrannosaurus* had, having a larger head was more important for survival (eating, protection, breeding, etc.) than a small one, and having smaller arms were not a hindrance. So the short answer is: because they did not need large arms to survive.

What is your favorite dinosaur?

Well, the dinosaur that is nearest and dearest to my heart is *Triceratops*. I have many favorites, but a stuffed *Triceratops* puppet which I named "Misty" was one of the things that encouraged the start of my journey in to paleontology. She has been with me since I was 5 years old, and currently takes up residence on top of my dresser.



V.I.P (Very Important Paleontologist) Shane Tucker



My name is Shane Tucker and I'm Nebraska's Highway Paleontologist. I grew up about 50 miles west of Lincoln in the small town of York, Nebraska. Neither of my parents were scientists but they encouraged me to pursue my interest in paleontology and nature.

I attended the University of Nebraska-Lincoln and received a B.S. in Geology with minors in Biology and Math as well as a M.S. in Geosciences with a specialization in Vertebrate Paleontology. During my undergraduate career, I worked as a student assistant to the collection manager and spent two seasons at Ashfall Fossil Beds as an intern which included excavation, fossil preparation, and bonebed interpretation as the main job duties. In graduate school, I spent one summer working for the Nebraska Geological Survey mapping and describing the geology along the Niobrara River in Cherry County which was compiled into a geologic map.

I started as the full-time fossil preparator for the Nebraska Highway Paleontology Program in January 2000 and became the Highway Paleontologist in 2007. During my tenure with the Program, I have probably driven every mile of highway in the State.

How old were you when you decided on paleontology as a career?

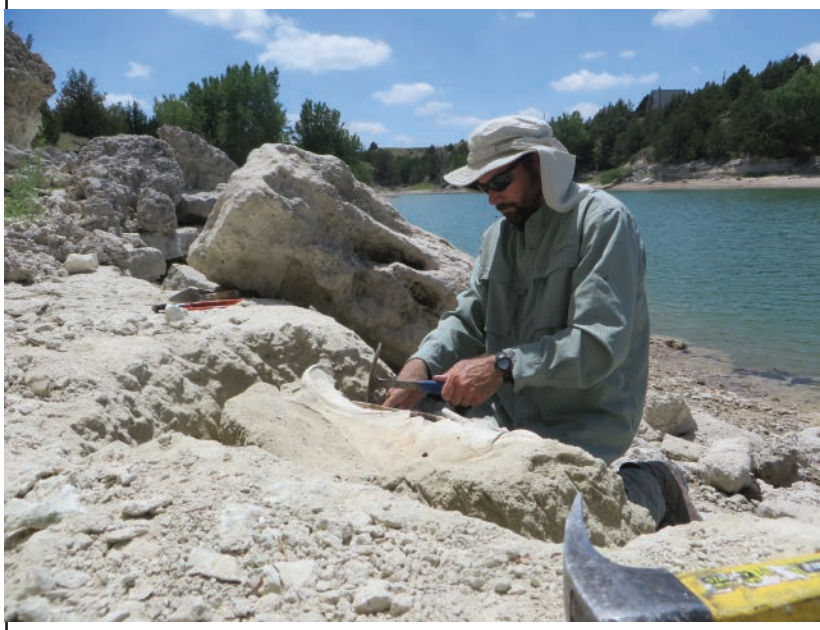
I have wanted to become a paleontologist since I was a small kid. I was always interested in dinosaurs and loved picking up rocks, bones, and fossils while outdoors. Fortunately, I get to live my dream on a daily basis. It really doesn't feel like work because I get to do what I love and there is always something new and exciting to discover.

Do you have a favorite prehistoric plant / animal?

There are so many cool prehistoric mammals. One of my favorite ones is the horned rodent. *Ceratogaulus* (formerly *Epigaulus*) had to be one of the most adorable animals out there. Every time I drive past a prairie dog town, I envision a group of horned rodents scurrying between holes or standing offering an alert to others in the town. Another would be the saber-toothed carnivore *Barbourofelis fricki* or big bone crushing dogs like *Epicyon* or *Borophagus* are pretty exciting too.

What do you do, as a Highway Paleontologist?

The Highway Paleontology Program is a cooperative effort between the Nebraska Department of Transportation and the University of Nebraska State Museum to collect fossils threatened by highway construction. My duties include reviewing highway construction projects for their potential impact to paleontological resources. I review proposed borrow pits, asphalt plant sites, stockpile sites, etc. associated with these projects for their impact to these resources as well. I actively monitor the projects for fossils, collect the fossils, and document these sites. I prepare fossils in the lab and sort gravel concentrate for microfossils. I conduct research on these specimens and give presentations on the Highway Program and Nebraska Paleontology to various school groups and civic and professional organizations.



Chiseling sandstone from an eleven million-year-old barrel-bodied rhinoceros skull.

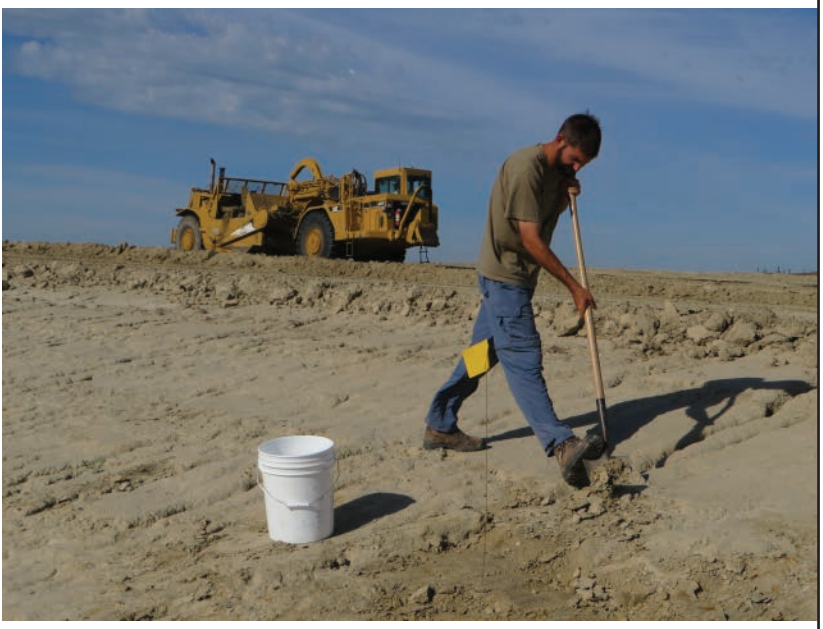
What was your biggest / coolest discovery?

We collected the middle third of a long-necked plesiosaur which is only the sixth one ever recovered from Nebraska. There were also several situations in which a fossiliferous ancient river deposit was exposed and we recovered several hundred specimens over multiple weeks. Some of the highlights include a rare sling-shot horned protoceratid ("deer") skull which is the only skull of this particular species known from Nebraska. I also found an extremely large giant tortoise (3' long by 2.25' wide) from the panhandle. The weight of the field jacket including the matrix, shell, and plaster was 2450 pounds. It is one of the largest giant tortoise specimens that we have in the UNSM collection.

You prepare fossils as well – do you prefer field or lab work?

Each duty is rewarding and enjoyable but a mix of the two is good. Both have their challenges. It is hard to beat working in an ancient river deposit that is full of fossils. I've been fortunate to do this several

times. The worst part is stopping to make field jackets and map the specimens. For every hour of dig time, it seems there is at least double or triple that time for specimen and site documentation.



Sampling Pleistocene sediments for microfossils on a highway project near Kearney, Nebraska. Snail shells and gopher remains were recovered from this 12,000-23,000 year-old rock layer.

Is there anything you don't like, or that frustrates you with paleontology or fossils?

I hate being asked how much the fossils are worth. They are nonrenewable resources with infinite scientific value. Also, when in the field working an extremely fossiliferous quarry and making field jackets. You try to make a pedestal for the specimen that you need to jacket but encounter other bones all stacked on top of one another. The field jackets keep getting larger and larger to include everything in one jacket.

What advice would you give to aspiring paleontologists?

Persistence and adaptability. It is extremely difficult to find a job in paleontology especially as a curator or research professor. Diversify your skillset and be willing to pursue other opportunities that may complement their work. There are many more job positions in the areas of museum studies, collection management, fossil preparation, mitigation paleontology, middle/high school science teachers, outreach and education, and scientific illustration which will allow you to be involved in paleontology. And remember you can always do paleontology as a hobby and make important discoveries so you don't need a "paleontology" position to make an impact on the field.

What is YOUR favorite dinosaur?

A Twitter screenshot has been making the rounds of social media, saying:

> *When you become a grown up, people stop asking you what your favorite dinosaur is.*
>
> *They don't even care.*

This isn't true for everyone, as just last week a friend and I were having an intense discussion on "new" and "classic" dinosaurs. But then again, I know we paleontologists are kind of an odd group of people. So for those of you who still love dinosaurs – what is YOUR favorite dinosaur? Send us your answers! Participants will have their names added to a drawing for AWESOME prizes.

1. Tell us what your favorite dinosaur is – pick something from history, a movie, a TV show – the sky is the limit! Just make sure it's a dinosaur (no pesky mammals here!).

2. Can you tell us why your choice is your favorite? It's not necessary, we just like fun stories.

3. Give us some kind of contact info so we can let you know if you've won one of our awesome prizes. Phone, e-mail, snail mail – whatever your preferred method of contact is. We're flexible like that.

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