

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!

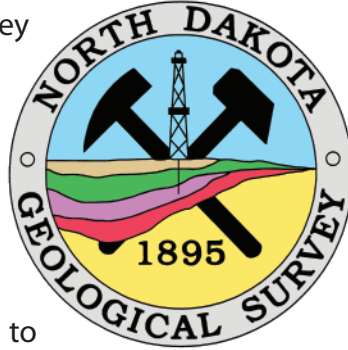
Fall 2020 No. 38

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

becbarnes@nd.gov

Next Issue: December 2020

Please e-mail us if you wish to receive the electronic version of FIND, or view past issues at:
<https://www.dmr.nd.gov/ndfossil/kids/>



It's not a year at Medora, without crocodile coprolites!



A great plant pocket was discovered by our intern, Hayley. She uncovered a bunch of plants.

2020 Public Fossil Dig Review

This year we had a very odd summer, but everyone worked together to make it as safe as we could. We ended up bringing our digs down to 53% capacity (some days were full, some were low, but most were about half-full) in order to promote social distancing and safety. A benefit of having low numbers was how much personal time we were able to spend with our diggers!

Medora

We relocated where last years' pocket of *Champsosaurus* material was coming out, and found even more bones. Part of a jaw, more backbones, a phalanx (toe-bone), and part of the shoulder. Coprolites were everywhere, and fish vertebrae galore.

The spring flowers were in bloom, including the prickly-pear cactus. A flash of pink let us know that even the barrel-cactus were in flower.



Part of our *Champsosaurus* pocket. This ischium (1 of 3 bones in the hip) was one of the finds. The bone is nice and solid, and we can't wait to get it all cleaned up. Good eyes, a steady hand, and patience won out this day. Go too fast, and the bones get missed - or worse - destroyed!



A *Champsosaurus* vertebra - notice the super flat end? This feature is called "**acoelous**" meaning it's flat, instead of curving in or out. Mammal (our) vertebrae are also acoelous.



Some bones we can't get 100% identification on until we get them back to the lab. This *Champsosaurus* limb bone is a little tricky while still in the dirt. They don't have a lot of complex features, like crocodiles - so this could be a tibia, or a femur, depending on what the ends look like. We want to keep as much dirt around the fossil as possible for padding, until we get it back to the lab to clean. We make an educated guess in the field, and that guess can change quickly as more of a bone is uncovered. The little kink at the bottom right sure looks like a femur though!



Not every bone that we discover is in good condition. This little bone would have been from the flat part of your hand or foot (like your palm) - if we don't know which, we call it a "**metapodial**." **Meta** refers to middle, and **podial** means hand or foot.

Bismarck

This was it - this was finally the year where we successfully removed the two giant *Triceratops* jackets! It took a lot of planning, even more plaster, and some heavy machinery, but we got the jackets safely back to the lab. It will be a while before we can work on them, but at least they're out and protected. The days blew by - some perfect weather, some drizzly, and some scorching hot. This was our first year trying out Family Half-Days at this site, and we think it went pretty well. Everyone was careful and attentive.

Four and a half tyrannosaur teeth were discovered this year, and one tiny gem: a *Dromaeosaurus* tooth. Volunteer Trissa has been digging with us since 2012, and each year she has had one goal - to find a tyrannosaur tooth. Well this year she found the *Dromaeosaurus* tooth, which she says was **EVEN BETTER**.



Dromaeosaurus teeth are very small - check out how big this tooth is, in comparison with Trissa's nail!



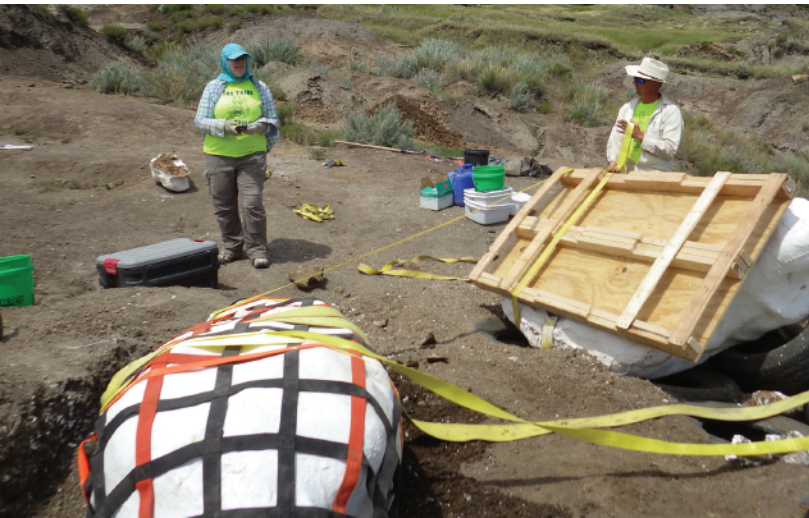
At left, a young tyrannosaur tooth. At right, a young crocodylian osteoderm (skin armor).



This beautiful metatarsal (the long flat bones in your feet) from a theropod (meat-eating) dinosaur was an exciting discovery. Bones from theropods like *Tyrannosaurus* or *Dromaeosaurus* are very rare, because there were fewer carnivores than herbivores. We find lots of theropod teeth because as they eat, they shed old teeth to make room for new teeth. So, if we find a tooth - that means the animal probably didn't die. If we find a leg or foot bone... it is more likely the animal died to lose that bone!



Each bone we pull out needs to be protected in layers of burlap and plaster for transport. Dirt is the only thing holding these bones together - so the more dirt we remove, the more unstable.



Sometimes this means a LOT of plaster, and extra support. These two *Triceratops* jackets have rebar (metal rods) to help reinforce them, as well as a wood pallet.



If those jackets get too big, people along can't lift them. It may be time to call in some heavy equipment! This loader carefully threaded between rocks on our walking path to the dig site, in order to pick up the two heavy jackets, one at a time. The driver was used to hauling giant hay bales, and said that the jackets felt much heavier than the hay he would normally haul.

In this photo, if you look closely you may notice some old tires wedged between the loader's bucket and the towing straps. This was to protect the straps - without the tires, the bucket could have sliced right through because of how heavy the jacket was!



Our trailer was not happy about having two giant jackets loaded on to it. Paleontologist Jeff drove back to Bismarck s...u...p...e...r s...l...o...w...l...y so the jackets wouldn't bounce too much.



One family of diggers came in style! They all had matching dinosaur socks on!



LEGO Digger Dagmar joined us on site too. Here she is holding a crocodile tooth. It looks gigantic in her hand!

Pembina

You never know what you're going to catch on this prehistoric fishing trip. Last year we found a lot of mosasaur material – this year, hardly any at all. Instead we found new pockets of fish. Big fish, little fish – lots of fish!



Becky and Clint pose behind their catches.



Here's the fish skull Clint found - it may not look like much because fish skulls tend to fall apart into a pile of mush...



Here's the fish tail Becky found - this one may also need a little glue and some careful preparation work before it looks good!



It's not just heads and tails though - the vertebrae above were weathering out of the hill, falling down the slope. The vertebrae below were doing the same thing. We know they came from two different fish, because they are not only different sizes, but different shapes as well.



Looks like Digger Dagmar is wandering through all the gypsum crystals that are found at the Pembina Gorge site. The bones at this site are preserved with gypsum, which is very soft. It's the same material that you make plaster or sheetrock (in your walls) with. Our other sites have bones preserved with iron, making them a darker chocolate color, and much tougher.

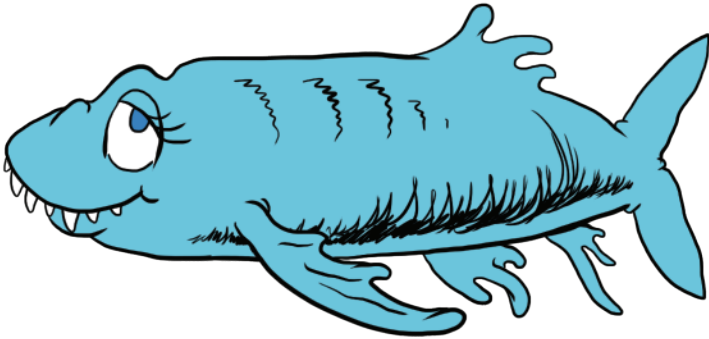
We Must Dig Fish

Here's a parody of an author and artist you may recognize - Dr. Seuss! While reading through One Fish Two Fish Red Fish Blue Fish, we thought it was perfect for the Pembina Gorge this year... with a little spin!

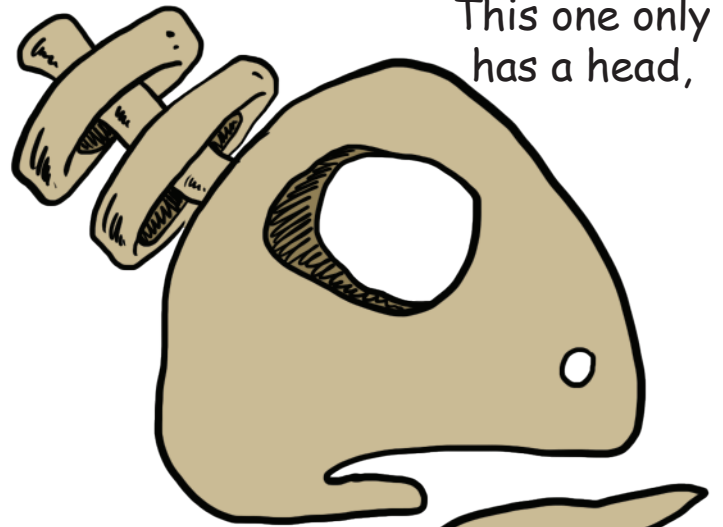


Small fish,

Big fish,

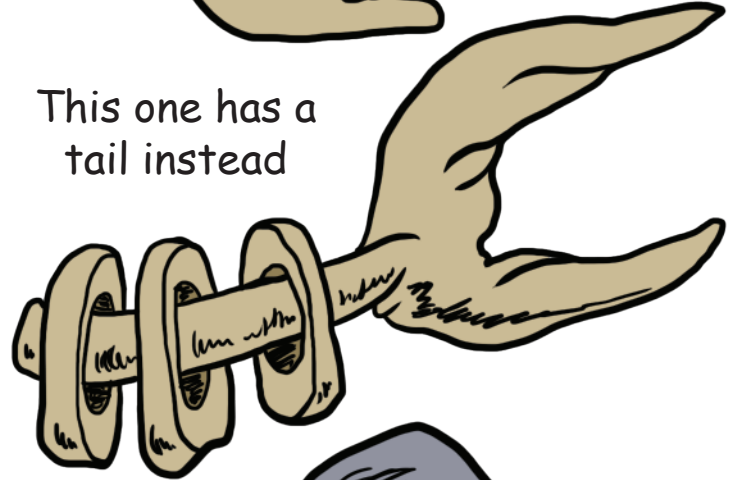


We must DIG fish!



This one only
has a head,

This one has a
tail instead



Turned to fossil
once it's dead!



Can any of you add another verse? Maybe about the dinosaur site or swamp site? We'd love to see!

Upcoming Events

This winter, our Dakota the dinomummy will have a new exhibit! Light-up areas with draw attention to different features on the tail. Our newest research. A 3D printed touchable section, scanned from the tail. Lower height and closer glass for easy viewing. We hope you'll enjoy Dakota's new digs!

