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

becbarnes@nd.gov

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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/

Feature Fossil:
Didymoceras

Didymoceras is a type of ammonite with an irregularly coiled shell. This is called a **heteromorph**, meaning different shape. Ammonites with evenly coiled shells are called **homomorph**, meaning same shape. They have been collected from the Pierre Formation of North Dakota, and lived during the Late Cretaceous, ~80-70 million years ago.

Like many ammonites, *Didymoceras* was sexually dimorphic - meaning males and females look different. In their case, the females grow to a much larger size (~11 inches tall), while the males are smaller (~7 inches tall). Dimorphism can be seen in many animals alive today - a male peacock has a fancy brightly colored tail, while the female "peahen" does not. In deer, a male buck grows a pair of antlers, while a female doe does not. Can you think of other examples?

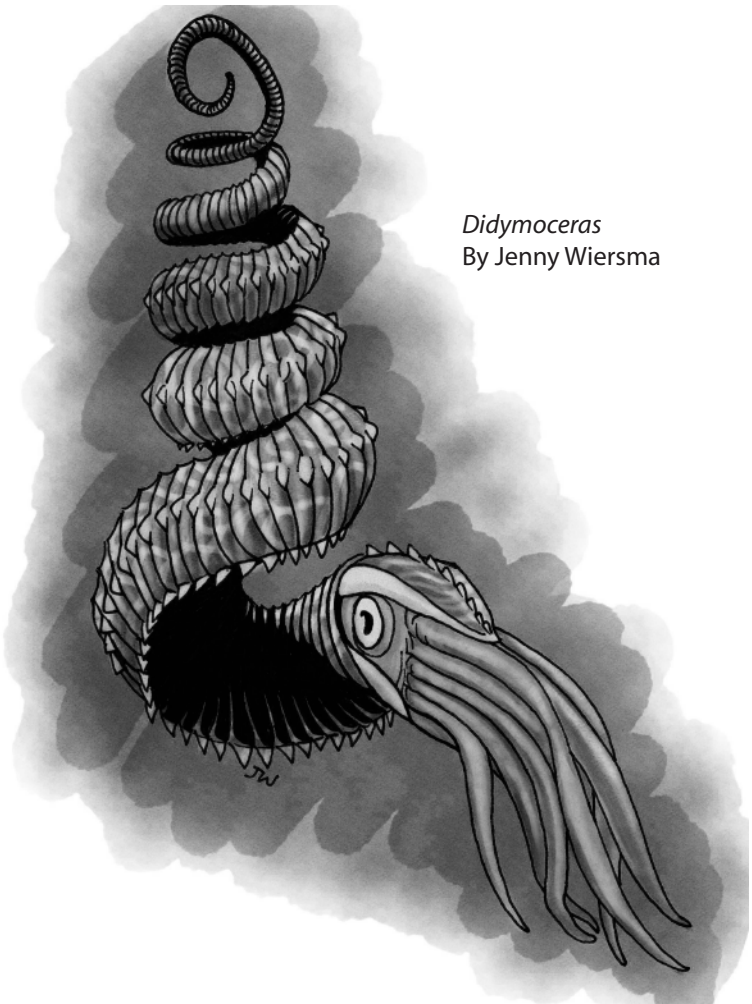
The odd shaped shell of *Didymoceras* stems from three stages of growth during their life. During the first phase, the animal grows in a straight line, bends, then straight again. During the second phase, the animal loops its shell around and around, in loose whorls (coils), about 3.5 times. Finally, during the last phase, the animal bends into an upward-facing curve.

Didymoceras is a cephalopod (Greek for "head-foot"), and is more closely related to squid and octopi than to nautiloids. Even though a nautilus looks similar on the outside (their shell), it is due to **convergent evolution**. This is the evolution of certain features (or traits) in plants and animals, generally because they live in a similar environment, or deal with similar pressures. Sharks have a streamlined shape that can cruise through the water. Mammals (dolphins) and reptiles (ichthyosaurs) both developed a similar streamline shape when they exploited an available water habitat. Sauropods developed a long neck, as did giraffes, yet they are not related.

So when artists reconstruct an ammonite like *Didymoceras*, rely more heavily on squid and octopi when it comes to soft tissue, . This means 8-10 arms instead of 90, and a complex eye instead of a simple light sensor.

Reader Art:

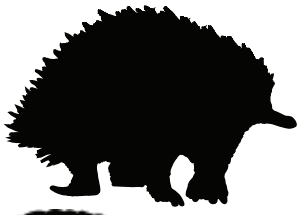
We want YOUR artwork! Please e-mail us a digital copy, or mail your traditional art to our address in Bismarck, ND.



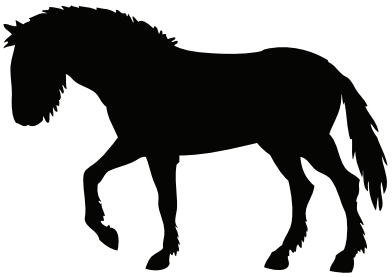
Didymoceras
By Jenny Wiersma

Convergence Party!

Below are a list of plants and animals with certain traits. Write down as many plants and animals for each that have a similar trait – some may have quite a few!

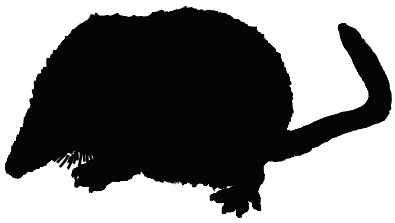


What has quills / spines like an echidna?



What walks on hooves, like a horse?

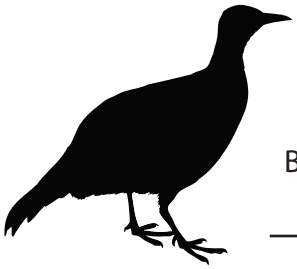
What has a long, sticky tongue like an armadillo?



Echolocation can be seen in shrews, as well as what?

Some glyptodont have a large tail club, similar to…

A squid eats with a beak – what else uses a beak to eat?



Birds aren't the only creatures that fly – what other groups have flight?

New Exhibit!

The Adaptation Gallery: Geologic Time will be welcoming a new addition to the Underwater World. As you enter the exhibit through the doors next to Dakota the Dinomummy, right now when you look up the first thing you see is the awesome (maw-some?) toothy grin of a mosasaur. But what could it be chasing?

During the 90s, a partial elasmosaurid (plesiosaur) skeleton was uncovered which included an articulated section of neck containing 15 out of 70 of the vertebrae.

Plesiosaur painting the cast will be attached to. Check out the new exhibit late April 2018 to see the whole thing!

We knew we wanted to put the actual fossil on display, but we also wanted to show off the impressive nature of the whole animal. A cast of a whole plesiosaur would stretch 45-50 feet from nose to tail; much too large for our current Underwater World space. However... what if we only showed part of a cast?

A lone neck and head would look out of place, but if we painted the rest of the animal on the wall, we could show the whole thing. But what to paint? We could paint a fleshed-out plesiosaur, and attach the skeleton cast to the wall, but that would look rather odd as half-and-half. We could paint the rest of the skeleton on the wall, and then attach the cast - but a painted floating skeleton would also look rather odd. We settled on an x-ray version, with part of the skeleton painted, fading into the fleshed-out creature. This way people can get a sense of what the animal may have looked like!

While painting right on the wall would have been awesome, to keep Becky from impersonating the artist Michelangelo painting the Sistine Chapel, the original painting is 40" wide. The wall it has to go on is 106" wide. What does that mean? Time for some math: we have to copy and expand the size of the original painting 265% to reach the wall size. Our last cast vertebra measures 9.5" tall, meaning the last painted vertebra needs to be 3.6" tall. This way when the painting is enlarged, the sizes of the vertebrae match.

So yes, even when painting and reconstructing fossils, math becomes very important. Keep up your studies!