

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!

Summer 2015, No. 17

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

becbarnes@nd.gov

Next Issue: September 2015

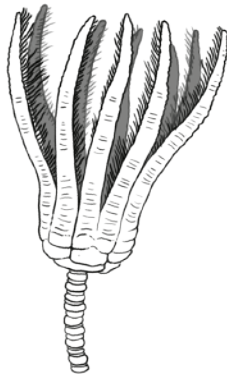
Please e-mail us if you wish to receive the electronic version of FIND, or view past issues at:
<https://www.dmr.nd.gov/ndfossil/kids/>



Feature Fossil: Crinoid

Crinoids were most common from the Ordovician up to the Triassic, (416-250 million years ago) at which point the Permian-Triassic mass extinction nearly wiped them out. They recovered slowly during the Mesozoic (when dinosaurs walked the land), and still live today. Even though they look like plants, crinoids are animals that live in **marine** (salt-water sea or ocean) environments. They are from the phylum **Echinodermata**, along with sea urchins and starfish. All of these animals have five-sided symmetry (**pentameral**) – meaning you can divide them into five similar looking parts. We, people, have **bi-lateral** symmetry meaning you can divide us into two similar looking halves if you drew a line down the center of our bodies. The name "crinoid" comes from the Greek word "*krinon*" (meaning "a lily"), and "*eidos*" (meaning "form"). Some types of crinoid are free-floating, able to move about – these are called *feather stars*. The type that is attached to the seafloor with a stalk (stem) are called *sea lilies*.

Sea lilies have a simple body plan. The **calyx** is the body portion, where the mouth, gut, and reproductive organs are. Attached to the bottom of the calyx is a **stem** made of circular **ossicles** (calcified, bony material) held together with more connective tissue. At the base of the stem is a **holdfast**, which helps attach the animal to the seafloor. The top of the calyx is divided into **arms** – the



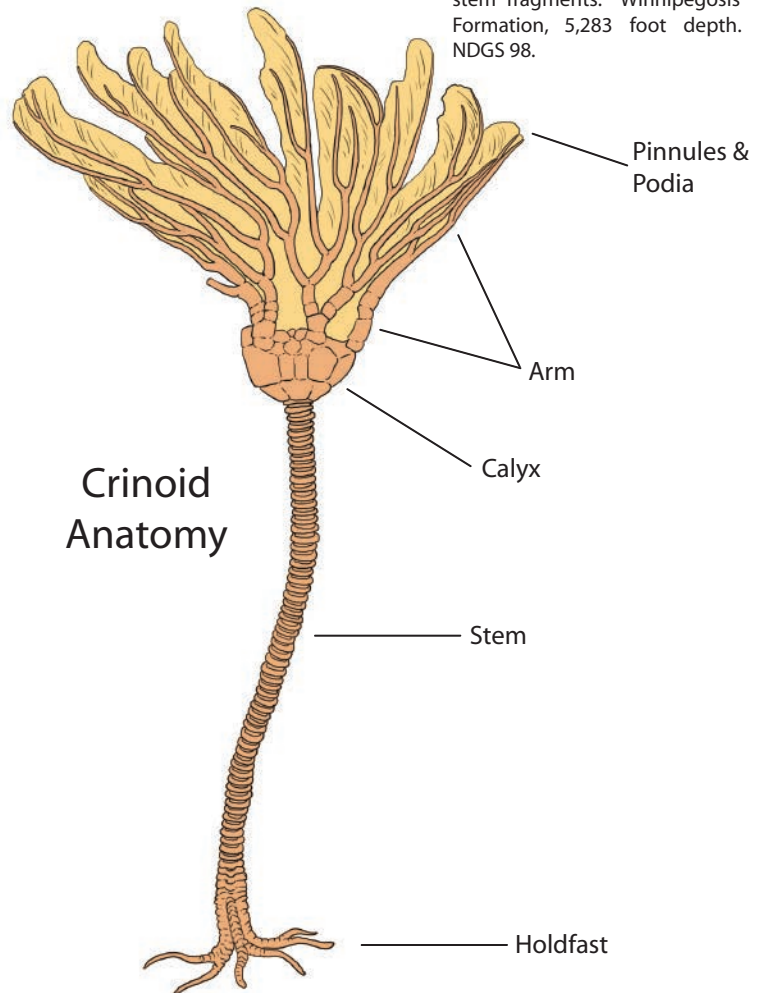
Simple crinoid sea lily with ten arms.

more simple forms have five arms, but complex versions have up to 200 divided arms! Each arm, similar in structure to the stem, can divide into smaller branches called "pinnules". Covering each of those pinnules are hundreds and thousands of moving **cilia** (microscopic hair-like structure) called "podia", which help create a small current in the surrounding water to pull food towards the mouth.

Most of the crinoids we find here in North Dakota are from core-samples, from hundreds and sometimes thousands of feet below us.



Core sample showing crinoid stem fragments. Winnipegosis Formation, 5,283 foot depth. NDGS 98.



Dinosaurs: In The Public Eye

A traveling show called “Jurassic Quest” came to Bismarck late April. The attraction was filled with dinosaurs and prehistoric animals of all shapes and sizes, with most of the animatronic creatures filling the inside of the Civic Center. The ball pits, bouncy-slides and rides were outside. I was concerned at first that my daughter (not quite two) would be terrified of the dark, noise, and big moving creatures – and my apprehension grew as I watched other young kids freaking out at the entrance. Boy, was I wrong! She looked around the place with wonder, and began “roaring” at each new dinosaur.



Image courtesy of JurassicQuest

The last time I visited a similar show of animatronic dinosaurs, I myself was about 5-6 years old – and that show kicked-started a life of paleontology. The difference between that mid-80's show and the current one was immense. Not that the older one was bad – not at all – but it had yet to include much of the research that was just hitting the field of paleontology. The animals were large and sluggish, great looming reptiles, with perhaps a classic “Godzilla” sound effect. These new animatronics had been seriously updated. The animals portrayed were more mobile-looking, graceful even. Active runners, athletes, energetic, warm-blooded, terrifying monsters. I was giddy to find that some even sported feathers – now a standard on numerous carnivorous dinosaurs.

This brings me to the Jurassic Park movie. I was a huge dino-nut by 1993 when the original movie came out. I had books, cards, toys, encyclopedias – you name it. As we entered the theater (dad and siblings in tow), after purchasing popcorn, my dad leaned over to me, looked me in the eye, and said “Not a word.” We then proceeded to our seats. The movie (and its sequels) only fueled my hunger for paleo. Active



dinosaurs were entering the scene – Robert Bakker's 1995 book “Raptor Red” gave you a warm-blooded dinosaur's point of view in a prehistoric world. In 2000 Disney came out with their “Dinosaur” movie, and you followed alongside Aladar the *Iguanodon* and his adventures. Television shows only increased in popularity. Jurassic Fight Club (2008), Dinosaur Train (2009), Dino Dan (2010) – I have to keep myself updated on these shows, because kids come into the museum and have no problem peppering you with questions about them.

All these shows and books have two sides to the coin. On the one hand, it's getting dinosaurs out there, into peoples' imaginations. Old dusty bones come to life – there is more known about dinosaurs now than ever, and each month brings new discoveries. The downside is not all these shows and books do justice to the limitations that these creatures had. Animals from different continents – even different times – are thrown together. Take Disney's “Dinosaur” again – an Early Cretaceous European *Iguanodon* probably never met a Jurassic North American *Brachiosaurus*, or fought with a Late Cretaceous South American *Carnotaurus* and Mongolian *Velociraptor*. BUT – it made a fun story.

Through movies, books, toys, video-games, and the ever increasing selection of Apps, dinosaurs are here to stay. My hope is that the continued blending of science and art bring forth better and better representations of these mysterious animals.



1933 King Kong