

# 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

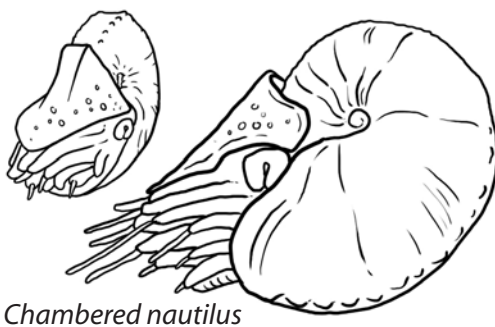
Next Issue: June 2013

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/newsletterkids.asp>



## Feature Fossil: Ammonites

Ammonites are part of the class **Cephalopoda** ("head-foot"), which are a division of the phylum **Mollusca** (See FIND issue #1 to read about another cephalopod: *Tusoteuthis*). Some cephalopods, like squid and octopus, can use changing skin **pigments** (colors) to help camouflage themselves, or can use ink sacks to obscure themselves while they escape a threat. The nautilus and ammonites have a protective **external** (outside) shell for defense instead. Other cephalopods like squid and cuttlefish have an **internal** (inside) shell, or shell-like structure. If you go through the bird aisle in a pet store, you may come across a "cuttlebone" which birds like to chew – this is the internal shell of a cuttlefish.



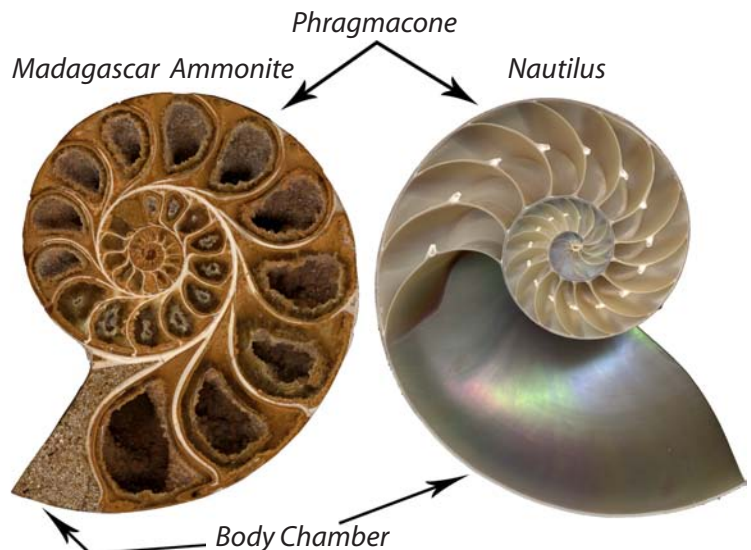
Chambered nautilus

Ammonites most likely had soft anatomy similar to other squid or nautilus, however because all we find as fossils are the shells, figuring out exactly what their soft parts looked like can be a challenge. Did they have eight tentacles like an octopus? Ten like a squid? Did they have a beak for eating? Since much

of that information is guess work, we'll concentrate on what we do know: the shell.

While the living chambered nautilus and paper nautilus look similar to an extinct ammonite, the insides of their shells are completely different. Both animals have many chambers in their shells that are created as they grow. Their body **resides** (lives) in the most outer section called the "body chamber." The old body chambers are walled off with "*septa*" and together called the *phragmacone*, which makes up the inside coils of the shell. In a nautilus, these chambers are connected together with little tubes, or *siphuncle*, that runs in the middle of each chamber. An ammonite's siphuncle runs along the outside edge of the shell. What these do, is allow the animals to fill the chambers with gas (or get rid of gas) so they can effortlessly float at different depths of water.

In the image below, you can see the siphuncle running through the middle of each chamber on the nautilus to the right. You can also see the iridescent mother-of-pearl shining off the inside of the shell. The fossilized crystal structure of the ammonite on the left makes the siphuncle along the outside edge hard to see. We used an ammonite from Madagascar instead of North Dakota because the inside chambers were so easy to see. Sadly, the body chamber on the ammonite has been removed for artistic purposes by whomever prepared the fossil. Only a little bit of it (the grainy color on the bottom left) still shows.



## Feature Fossil: continued...

The outside of an ammonite shell can be a beautiful thing. Often times the actual shell material (which during life was made out of a mineral called *aragonite*) is preserved, along with iridescent mother-of-pearl. This can reflect greens, blues, reds, and other colors. When this shell coat is missing, the sutures (where the chamber septa meet the outer shell) can be seen. These generally look like an ornate, branching design, which interlock each chamber with the next.



Above: Iridescent mother-of-pearl on the outside of two ammonites.

Below: Branching sutures seen in a straight-shelled baculites.



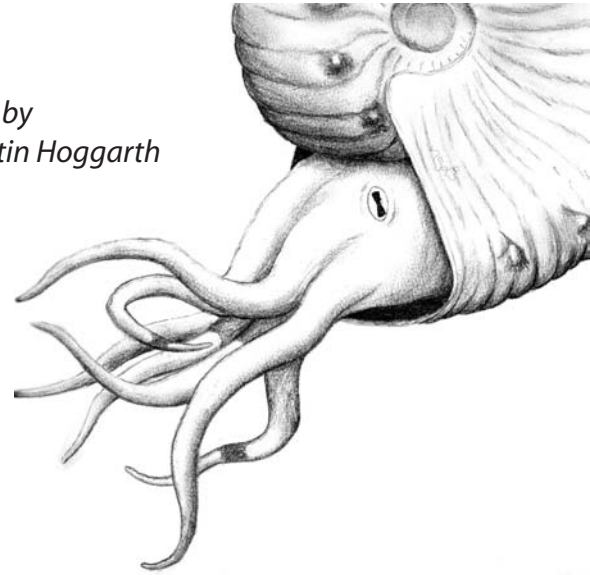
## Word Find Answers:

Below are the answers to the word find in the last issue. Words were taken from Amber, the Feature Fossil: TRAPPED, AMBER, TREE, YELLOW, SHEET, VARNISH, PROTECTION, BROWN, RESIN, STICKY, TRANSPARENT, FOSSIL, JEWELRY, CRETACEOUS, PERFUME, WASTE

## Reader Art

We want YOUR artwork! Please e-mail us a digital copy, or mail your traditional art (that you don't want returned) to our address in Bismarck, ND.

*Jeletzkytes* by  
Justin Hoggarth



## Ask Mr. Lizard

Have questions about fossils, dinosaurs, or anything related to paleontology? Send them in, and our paleontologists will do their best to uncover the answer for you.

## Just Imagine...

A group of ammonites floated together in the warm shallow sea, sunlight filtering down through the water in curtains of light. Some of the smaller animals traveled together in **shoals** (groups), while other larger ammonites prowled the sea on their own. This group was centered around a methane vent – a crack in the floor of the sea that bubbled forth gases. Surrounding bacteria fed on the methane; the bacteria in turn fed plankton. Snails, sponges, crinoids, and other creatures were situated around, filtering the water containing such rich food. All this activity had attracted schools of fish and groups of crustaceans, which in turn turned the whole area into a buffet for the group of ammonites. Old shells littered the ground; their soft parts long eaten by scavengers.

Check out <http://geology.gsapubs.org/content/early/2012/04/06/G32782.1.abstract> to read about real ammonite habitats around methane vents in the Dakotas!