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

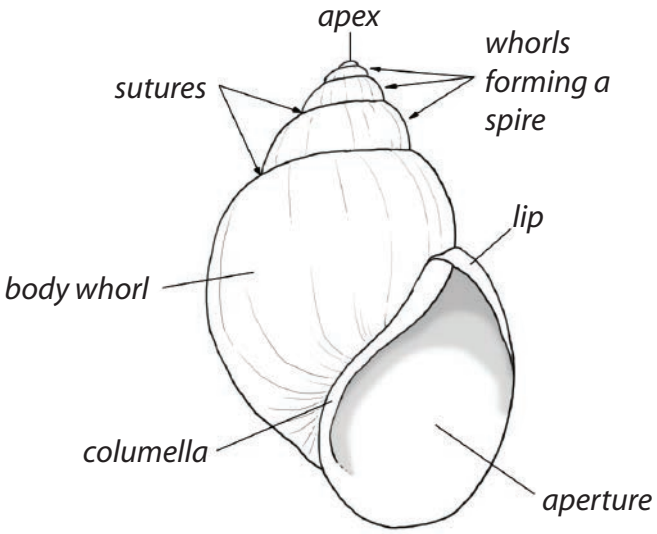
Feature Fossil:
Campeloma

Campeloma is a genus of freshwater snail that is still living today. We find fossils of this genus in North Dakota dating back to the Cretaceous, over 65 million years old! Snails belong to the phylum **Mollusca** - these are invertebrates (without a backbone) such as clams, squid, slugs, oysters, and of course snails.

What do all of these animals have in common? First off, they have what is called a **mantle**, or "cloak" that covers their organs. It is referred to as a cloak because it often forms an extended flap, like a cape! Most of these animals (minus the filter-feeders) also have a **radula**, which looks like a pointy tooth-covered tongue or ribbon that is used to scrape food (vegetation or meat).

We put snails (which have shells) and slugs (with internal shells) into a more narrow catagory, or class, called **Gastropoda** (Greek: gastr = stomach, pod = foot).

Snails are amazing creatures which have adapted to all sorts of habitats - from rain forests, to salt water in oceans, to lakes, ditches, muddy swamps, and even deserts in some cases. *Campeloma* belongs to a group of fresh-water snails called **Viviparids**, meaning they give birth to live young, rather than eggs.



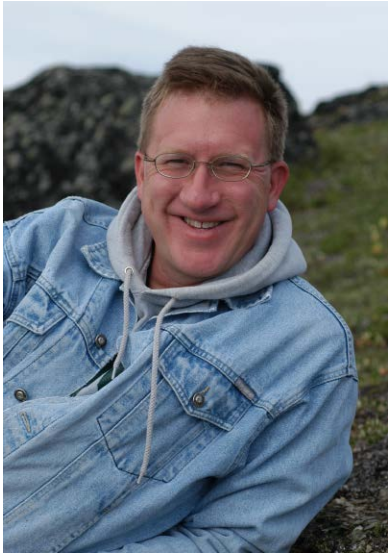
Above is some of the anatomical parts of a *Campeloma* snail shell. Not shown is a secondary shell part called an **operculum** ("little lid"), which acts as a trap door to the shell opening. If the snail is threatened, it can retreat into the shell, and pull tight the operculum (which is attached to the top of its "foot") for protection.

Like all snails, during development *Campeloma* goes through what is called **torsion**, where the body twists around so that all the internal organs are situated on the top of the animal - in the case of these snails, it is protected inside the shell. Due to this twisting around, this also means that the anus is situated above the animal's head...

Similar to their modern descendants, these animals most likely lived between 3 and 11 years. They seem to have a varied diet, and living *Campeloma* have been observed grazing vegitation, filter feeding, and even eating carrion (dead animals).

Below are two shells that are Paleocene in age (60-55 million years old), found in the Sentinel Butte Formation. The one on the left is from Williams Co., and the one on the right is from McKenzie Co. I even find these in my backyard, right here in Burleigh Co.

V. I. P. (Very Imortant Paleontologist): Michael Newbrey, Columbus State University, Georgia



My name is Dr. Michael Newbrey and I am a paleontologist who works on fish and questions about how climate change affects fish. I just moved from the Royal Tyrrell Museum of Palaeontology (largest Dinosaur Museum in the world) in Drumheller, Alberta, Canada to Columbus State University in Georgia. I grew up in the Fargo/Moorhead area.

How old were you when decided to be a paleontologist?

MN: I was six years old when I decided to become a paleontologist.

Was there an event or experience that triggered your decision?

MN: I decided to become a paleontologist after my parents gave me a fish fossil block containing multiple clupieds (herrings) called *Gosiutichthys parvus* for a Christmas present. I received the gift because the previous summer my parents took me fossil hunting and I was disappointed that we found nothing. Actually, I think my father was more disappointed than I was… I remember having fun being outside and in a new place. From that point on, I examined the fish block wondering why these fish were together. Today, I know they are part of a mass mortality of fish from the Green River Formation (Eocene), of Wyoming. The fish were concentrated in a small pool as their lake was drying up.

What plants or animals are your main study focus?

MN: I study freshwater and marine fishes including bony fishes, sharks, and rays. I am particularly interested in fish age and growth, and how their age and growth biology changes with climate change. I also identify and describe new species of fish. However, a colleague and I do have a manuscript in press describing a mosasaur (an aquatic lizard) with a fish inside its gut. A lizard fish of all things…

Perca flavescens - Yellow Perch

Do you have a favorite fossil plant / animal?

MN: I really like 60 million year old fossil pikes/musky from North Dakota!

Do you have any signature gear you wear or use (i.e. favorite rockhammer, lucky dental pick, etc.)?

MN: Nope, but my technicians know that I like to bring licorice in the field. Usually, I share some…

What do you like most about field work?

MN: Being outside, finding new and cool fossils, being the first one to see a new species of fish, and collecting data to provide an interpretation of the ancient depositional environment.

What do you like most about preparation?

MN: Not having to do it. I prefer someone else, who has much more experience, prepare my fossils. When preparation is done right, the fossil can be beautiful and be perceived as natural artwork. A preparator is usually the one who gets to see the fossil for the first time as it appeared when it was buried; very exciting.

Where in the world have you traveled looking for fossils?

MN: I have done work in the USA (North Dakota, South Dakota, Minnesota, Montana, Idaho, Wyoming, Washington, Oregon, and Utah), but I have also worked in Canada, Britain, Spain, Mexico, and Australia.

How did you train to work in your profession?

MN: I spent five years obtaining a bachelor's degree in biology with fisheries and limnology emphases at the University of Wisconsin – Steven Point. I spent a lot of time outside of my degree studying fossil fish and describing a new species of fish from North Dakota. Then I pursued a Master's degree, for two and a half years, studying submerged trees as fish habitat at the University of Wisconsin – Stevens Point. During that degree, I spent time on the side researching and publishing on age and growth of fossil fish. Then I moved to North Dakota State University to get a doctoral degree in Zoology focusing on the age and growth of fossil fish. There I spent five years obtaining my degree. After that I moved to Canada to spend six years working as a postdoctoral fellow at the Royal Tyrrell

Museum of Palaeontology and the University of Alberta working on fossil fishes.

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

MN: Sometimes, the blocks I backpack out of fossil sites are over 110 pounds. To me 110 pounds is heavy in the badlands. Usually, the heavy blocks or packs are nowhere near a road or vehicle. And then there was the time I was charged by two black bears in the middle of nowhere Alberta… that is another story. Anyway, always remember this rule when being charged by a black bear: first, get rid of the backpack.

What advice would you give to aspiring paleontologists / preparators?

MN: Study very hard, get high grades, gain experience, always push yourself to learn new things or never forget that you are a student for the rest of your life, aspire to be the best at what you want to do, always be honest, don't forget to bring yummy snacks for your field crew, and always have lots of fun. Oh, and don't forget to regularly apply sunscreen when outside.

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.

Reader Art

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

Special Interest: Heritage Center

OPEN!

That's right - the doors to the Heritage Center here in Bismarck are now OPEN to the public! We have displays in the hallways (including Gems & Minerals, Recent Aquisitions, Dakota the Dinomummy, Highgate Mastodon, and more), and two of the galleries are up and running - Geologic Time and Early People. If you're interested in dinosaurs, sabertoothed cats, three-toes horses, fossils in general, and even fluorescent minerals (those are rocks that GLOW under UV black lights), then this is a must-see place.

There will be a Grand Opening for the two galleries that are currently finished, so mark your calendars - we'll be having special activities and a ceremony for the Geologic Time Gallery on Saturday July 26th, 2014. The Early People Gallery will have their Grand Opening on Sunday July 27th.