

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!

Winter 2012, No. 7

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

becbarnes@nd.gov

Next Issue: March 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: Amber

Amber – the stuff of Jurassic Park legend, where dinosaurs were cloned from dino-DNA trapped in insects, bringing dinosaurs back from the dead; but what is it? Amber is tree **resin** (not sap) that has become fossilized. Tree sap contains mostly water and sugar, and is used as food for the plant. Resin is much more sticky, does not break down in water, and can act as way for the plant to get rid of waste, or even as a protective barrier against plant-eating predators.

Fossil resin can be an amazing time capsule, trapping insects, spiders, plant debris, and even small animals (like the lizard here: <http://smu.edu/sem/3D/3Dindex.html>) in its sticky self before becoming solid. One recent discovery even shows a spider about to devour a wasp, when both were covered with resin:

<http://tinyurl.com/spideramber>

Amber can be nearly transparent (see-through), or only translucent (can see light through it), pale yellow, dark brown, cherry red, and even blue or green.

Amber has been used as a semi-precious stone in jewelry for thousands of years. It can be polished, and has been used to decorate objects such as boxes, paintings, and walls. Other than being pretty, amber is also used in some perfumes. Other hardened plant resins have also been used for this purpose – you may be familiar with frankincense and myrrh. Dissolved

amber can be used as a varnish over paintings or musical instruments.

Amber could be formed from any plant that produces the right kind of resin – some amber comes from the Carboniferous period (320 million years old!) but most plants that produced this resin are much younger. Here in North Dakota, the oldest amber we find is from the Late Cretaceous Hell Creek Formation, about 65 million years old. Some of the amber we find here is bright orange-red and transparent, but very small brittle pieces. Other times there are large pieces we call “sheet” amber, which comes from resin that has oozed down the side of a tree in wide areas.

From tree resin to solid, a rainbow of colors, and used as scents, jewelry, paints, and more, amber is a very unique fossil with an amazing history.



Ask Mr. Lizard...

How do you know what dinosaurs ate?

We know what dinosaurs ate (in general) by looking at their teeth and bones. Many predatory dinosaurs, like *Tyrannosaurus*, had large pointed teeth, some with **serrated** cutting edges (like a steak knife). Other dinosaurs that ate plants had shorter peg-like teeth for stripping leaves off branches, or rows of flattened teeth used for grinding. We find the same thing when we look at modern animals - pointed teeth are great for eating meat, and flat teeth good for chewing plants.

If an animal has one type of tooth shape, they are called **homodont** (“same tooth”). Sometimes animals have a combination of tooth shapes (**heterodont**), like bears or humans. This is good for a mixed diet of meat and plants.

Dinosaur diets can be tricky to figure out at times from teeth alone, so we look at other traits, like claws. Maybe they have sickle-shaped claws good for slashing. Maybe they have long flat claws good for digging in the dirt, chasing insects or for finding roots.

WordFind

How many words can you find about our Feature Fossil? Read through the previous page for hints! Words are horizontal and vertical. Answers next issue.

E N H G B M C T A F R D E V F C
T R A P P E D R G O H K I J P K
Q A Y E Q L M A J S E L U C E V
X F N A O W C N P S Q J T R R W
Y A M B E R M S Z I G E A E F I
O C G P Z E S P P L D W O T U E
F B N G L S H A I D J E K A M L
U R M B N I X R N O X L P C E W
J O V F Q N S E R I S R K E Y A
T W R U I Y T N V T W Y X O A S
B N C T C D I T R E E G J U H T
Q I D J K O C A L M P R B S N E
W O H Z B S K C Y E L L O W L D
S H E E T B Y E H F J F K D O T
P V A R N I S H U S W P Q M R Z
T S W K U P R O T E C T I O N X

Extinction: Good, Bad, or Opportunity?

The Heritage Center Gallery is CLOSED – but is it the end?! During the Last Hurrah Party, the paleontology staff talked to the public about extinction. When quizzed most people could name the extinction that killed off the dinosaurs, but did you know there were at least five separate mass extinctions that affected life here on Earth? One of those (the Permian extinction, about 250 million years ago) nearly killed off everything, plants and insects included!

Just Imagine...

The little lizard lay sprawled on a *Metasequoia* branch, soaking up the Sun's warmth through a break in the **foliage** (clusters of leaves). Crawling along the surface of the tree was the occasional ant foraging for food. The movement of one ant caught the lizard's attention, and it eyed the insect hungrily. The lizard moved forward with little bursts of speed, turning its head from side to side, eyeing its prize. Sensing a predator, the ant crawled away too quickly, and became caught in a fresh **gout** (spurt) of tree resin leaking from the bark. Finally lunging after the ant, the lizard bit into the sticky **viscous** (thick) liquid, and pulled back from the trap. It pawed at its mouth, struggling to remove the resin. Scraping its scales on the tree bark, it managed to disentangle itself from the worst of the goo. The ant however, was not so lucky. Trapped in the resin along with a few bubbles and *Metasequoia* needles, it would eventually become a part of hardened amber, waiting to be found in the future as a fossil.

Extinction always gets a bad rap, but it also has a good side. If the extinction at the end of the Cretaceous (65 million years ago) never happened – would mammals have evolved to where they are now? If the extinction at the end of the Triassic (200 million years ago) never happened, wiping out all the mammal-like reptiles, would dinosaurs have ever taken over?

Extinction can come in many forms – the ones just mentioned had numerous natural causes, including volcanic eruptions, asteroid impacts, and climate change. They can also be caused by direct stress and pressure, such as by humans (overfishing, deforestation, habitat destruction, etc.), which is why you see news about endangered or threatened species.

The closing of the Heritage Center gallery could be called an extinction, because everything inside is being removed, refurbished, and repaired. However, this gallery closing is to make way for THREE new galleries (total of four). One of those galleries will be Geologic Time – where fossils hidden in our collections, fossils that are already on display, and new life-size casts will be brought in to help tell the prehistoric story of North Dakota. So in order to make way for the new galleries, the old one is going the way of the dinosaurs: extinct!



Becky Barnes led the "Prehistoric Parade" through the gallery, then handed over a special lock and "skeleton" key to close the doors.