Fossils of Northwest Arkansas
Discovery Box and Guidebook Index

(Updated January, 2010)

Inventory List of Fossils

Box A	1	Stromatolite-Cryptozoan minnesotaensis
	2	Coral – Favosites
Box B	32	Plant - Stigmaria

Please Do Not Open the Following Containers:

Box C	3&4	Coral - Cathayophyllum
Box D	5&6	Coral - Lophophyllidium
Box E	7&8	Coral - Michelinia
Box F	9-11	Clams
Box G	12&13	Snails
	14&15	Ammonoids
Box H	16-18	Nautiloids
Box I	20&21	Bryozoan - Fenestella
Box J	22-25	Brachiopod - Spirifer, Hebertella, Anthracospirifer, Productid
Box K	27	Crinoid columnals
Box L	28	Various crinoid fossils
Box M	29&30	Blastoids - Pentremites
Box N	31	Shark - Peltadous
Box O	33	Plant - Lepidophosis
Box P	34	Plant – Calamites (large piece)
	35	Plant – Annularia (small piece)
Box Q	36-38	Fern - Pecopteris
Box R	39	Petrified Wood
Box S	40	Coal
Box T		Sample of limestone and Boone formation
Box U		Trilobite reproduction

For Hands-on

Bag V	Bag containing 27 fossil replicas (some plastic) and a quartz
Bag W.	Bag containing clay to create your own fossils
X	Picture of crinoids in notebook
Y	*Book National Audubon Society Field Guide to North American Fossils*

Fossils
Description of Discovery Box Contents

BE CAREFUL WITH FOSSILS, MOST ARE FRAGILE!

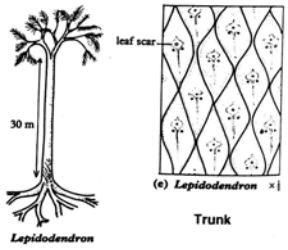
*Dates refer to the approximate time period the fossil lived. The exact age of most of these specimens is undetermined.

These fossils are not in boxes and may be handled. Look for the number in the white dot painted on the fossil:

1) ***Crinoid (Sea Lily) replica***

Relatives of Crinoids or Sea Lilies still exist in our oceans today. They have been around for about *450 million years* since the *Paleozoic Era* but many Paleozoic species became extinct in the *Permian Period (280 – 225million years ago.)* Paleozoic Crinoids were animals rather than plants and used their long stalks much like roots to anchor themselves to the shallow sea floors of the period. They were found all over the world and were so numerous in places they created under sea 'forests'. Crinoids fossilize easily due to their bodily make-up and are therefore a common fossil. This fossil is a replica.

2) Lepidodendron (Club Moss trunk)



One of the earliest primitive trees, Lepidodendron thrived during the *Carboniferous Period (359 – 299 million years ago*.) Much of the coal mined in North America comes from the leaves, stems and trunks of these trees. They could grow up to 130 feet tall with a trunk diameter of up to 7 feet and thrived in very hot and humid environments.
As the tree grew, it shed leaves from older parts of the trunk that left diamond-shaped leaf cushions and scars. You can see these patterns on this fossil.

3) Stigmaria (Lepidodendron root stem)

This fossil is the root stem of the Lepidodendron tree. Although the entire tree is called Lepidodendron, the root stems, leaves and cones are considered independent fossils and have different names. Again, this dates from the *Carboniferous period (359 – 299 million years ago*.)

PLEASE DO NOT REMOVE THE FOLLOWING FOSSILS FROM THEIR CONTAINERS:

BOX A

4) **Lepidophosis (Club Moss):**

This specimen is an external mold of the leaf bases of a Lepidodendron tree at the upper part of the plant. Club mosses require plenty of water to reproduce, and have been overshadowed by modern plants, so that now only three small representatives of this group exist.
Lepidophosis (club moss)
345 to 225 million years ago
Sandstone and shale

BOX B

Corals - These are the animals whose limestone skeletons build coral reefs. They are related to sea anemones, sea fans, sea pens, sea feathers, and jellyfish. They have a soft, sac-shaped body with only one opening, and tentacles around the opening. All of these animals have tiny stinging cells to capture their prey and defend themselves from predators, although most are not harmful to humans. The tentacles wave in the current and the stinging cells on them capture tiny organisms. Some have algae growing in their flesh that produce additional food, while the coral provides a home for the algae. Since the corals have hard limestone external skeletons they make excellent fossils and many are preserved. Corals often live in colonies of many animals whose skeletons grow together. They are mostly found in warm, shallow oceans with clear water and a current

5) Cathayophyllum

450 to 270 million years ago
Found in limestone

6) Lophophyllidium

Typical shape of solitary rugose coral

280 to 225 million years ago
Found in Limestone
A common solitary rugose coral.

Rugose Coral - another extinct group of coral. Rugose coral have septa (dividing walls or partitions) in groups of four. They are often large solitary corals which grew with the bottom of the "horn" sticking to the soft ocean bottom. Notice the radial (like spokes of a bicycle wheel) lines dividing the coral wall - corals are built radially, unlike humans, which are built bilaterally (divided in two). This rugose is several smaller specimens of the same solitary coral which happened to grow next to each other.

7) Michelinia

A similar coral

400 to 250 million years ago.
Found in Limestone
Another tabulate coral, this specimen is a branching variety.

Mollusks - Since developing from an early worm-like ancestor, mollusks have become the most diverse group of invertebrates and one of the most common and important of fossils. This group has survived and flourished up to modern times, inhabiting many environments in the oceans, freshwater, and on land. Most modern mollusks have shells, such as snails, clams, and oysters. Some do not, such as slugs, octopus, and squid. Mollusks generally have a head with eyes and tentacles, a large muscular foot, and a mantle, tissue that covers the body and also makes the shell. In Arkansas it is possible to find many gastropod (snails), bivalve (clam, oyster, scallop relatives), and cephalopod (squid, nautilus and octopus relatives) fossils.

8) Clam

Clams

This nicely-preserved fossil from near Greenland shows that after death the two shells of the bivalve were held together by the hinge through the fossilization process.

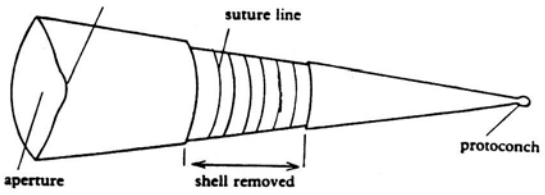
9) Straparollus

430 to 300 million years ago
This is a snail fossil from a common, extinct form.
Although they originated in oceans, many modern species are now found in freshwater and on land. The soft animal is protected by a shell, and it glides around on its large foot, while the head leads the way. This kind of animal has many different lifestyles, including grazing, scavenging and predator. A very common type of fossil and an important and numerous group of animals.

Snails

10) Brachycycloceras

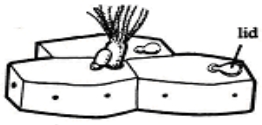
This straight nautiloid cephalopod is ornamented with ridges on its shell.



Straight Nautiloid

BOX C

Bryozoans - Bryozoans are colonial animals, similar to a tiny coral in appearance. Many separate animals of the same species live together, each in its own compartment. Each animal waves its own set of tentacles to capture tiny organisms like plankton and floating particles. They differ from coral in several ways: being smaller, always colonial, having more complicated soft parts (even though they're smaller), and individual animals are not arranged radially (like the spokes of a wheel). They are common fossils and were important in ancient times. They are still common in the oceans, and a close examination of many objects you find on the beach will reveal the distinctive "lacy" pattern of the bryozoan which grew on it. The large jelly-like masses that can be found in local lakes are a freshwater bryozoan.



Bryozoans enlarged

11) Fenestella

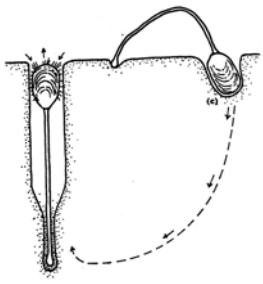

Fenestella

360 million years ago to 320 million years ago
Common in Northwest Arkansas limestone and chert. This lacy bryozoan grew attached directly to any hard surface. Each compartment contained at least one separate animal of the colony.

Brachiopods - This is one of the most common of ancient fossils. Although it looks a little like a clam, internally brachiopods are a different animal than clams, which are mollusks. Brachiopods filter the water for food particles with an elaborate apparatus called a lophophore, which mollusks lack. At the back, near the hinge, a fleshy stalk attached some species to the bottom. Others burrowed in the bottom or rested on top of it. Brachiopod fossils come in different forms: the shell may be preserved, or there may be a cast of the inside, or a mold of the outside. Although this is one of the largest groups of fossils, only a few survive today.

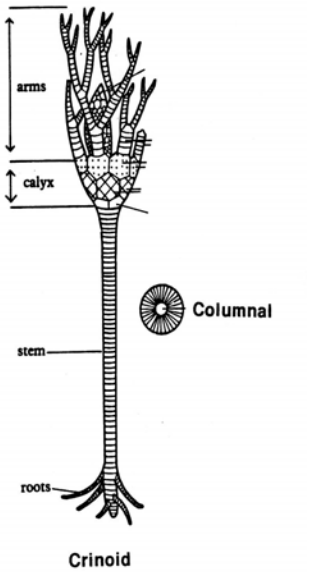
12) Hebertella

480 to 430 million years ago
Although it looks like a clam, the two shells are not the same shape, a brachiopod characteristic that helps to identify this fossil.


Burrowing behavior

Echinoderms, or Spiny-skinned Animals - Starfish, sea urchins and sand dollars are the most common modern members of this ancient group. They are known for having a hard skeleton directly under their skin. They also have tube feet that are used for moving around, finding food, and respiration. One distinctive feature that you can often see is a five-pointed star arrangement. Our fossils are mostly of two less familiar members of this group, the crinoids and the blastoids. Both were important in ancient times.

13) Crinoid Columnals



Crinoid

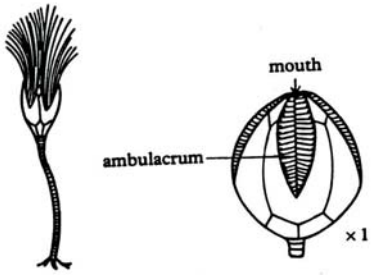
450 million years ago to present
Very common in limestone rocks of the area

These are pieces of the stalk of various crinoids. The drawings show the flower-like appearance that give them the name sea lilies. They grew (and still grow in some deep areas) attached to the bottom. "Roots" attached it to a rock. The stalk consisted of many stacked, round pieces, called columnals. They are similar in shape to buttons. At the top, the arms waved in the current and collected tiny particles as food. The columnals are the most common fossils. It's harder, but still possible, to find other parts, such as the arms, calyx (part just below the arms) or roots.

14) Miscellaneous Crinoid Fossils

The straight object is the arm of a crinoid, and the small cup-shaped object is Agassia, a free-floating crinoid that would have dangled tiny arms in the current as it drifted.

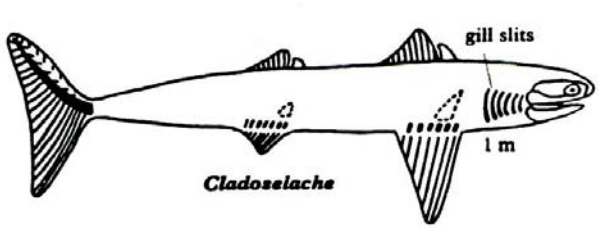
15) Pentremites



Blastoids

359 million years ago to 318 million years ago
Many found near Brentwood
Pentremites is a blastoid. Sometimes mistakenly called "fossil hickory nuts" or "fossil acorns," blastoids are an extinct animal similar to crinoids, and like them, have bodies divided into five parts. They looked somewhat like crinoids, with a short stalk to attach themselves to the bottom and small arms at the top for gathering food particles from the current. The top is a common fossil. Like sea urchins and other echinoderms, blastoids were mostly hollow inside. This is a broken fossil showing that after it died, the blastoid became a geode, a hollow stone with crystals growing on the inside.

Sharks - Even though they've been around for about 400 million years the only fossil ever found of most sharks are the teeth. Although their soft, cartilaginous skeleton doesn't make fossils, they have lots of teeth. Each tooth that you see in a shark's mouth is backed up by several spares hidden away in the jaw. When a tooth breaks or wears out, a new one grows up to replace it. Shark's teeth are not as common in Arkansas as in some other places, but they can be found here.



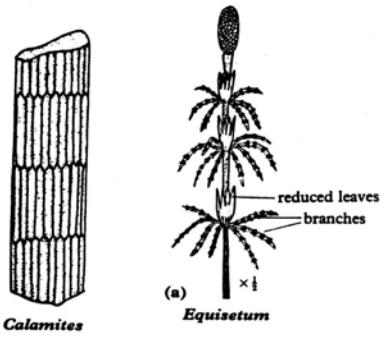
An early shark

16) Peltadous

This shark's tooth appears designed for crushing or grinding rather than tearing flesh and may have belonged to a shark that ate mollusks, such as clams, from the ocean bottom.

BOX D

17) Calamites (Horsetail)



A modern horsetail

360 – 250 million years ago (some species still survive)
This is an internal mold of a large, tree-like form of the modern horsetail (sometimes called scouring rush because the pioneers used them to clean pots and pans). After the plant died the trunk filled with sediment which eventually became stone, preserving the shape of the inside of the trunk. Calamites grew to be as much as 66 feet high. Like Lepidodendron, its modern relatives are much smaller and less important

18) Pecopteris (fern)

325 to 280 million years ago
Sandstone and shale formations
Ferns are common primitive plants of moist areas. They reproduce by tiny spores, which must land in water or a moist environment to grow. Pecopteris was a large, tree-like fern from the swamps that produced coal. These are preserved in shale.

19) Petrified Wood

Southern Arkansas
Look carefully at this petrified wood sample and you can see the grain of the wood preserved in the rock. The pattern shows that this was a conifer. Petrifaction occurs when the wood is washed into a body of water and dissolved minerals in the water penetrate the sample. These minerals replace the wood with stone, preserving the shape and some of the features of the wood.

20) Coal

Usually found in formations with shale
Coal, a sedimentary rock that burns, is associated with the formation of large growths of land plants that grew in wet areas. The remains of the plants fell into swampy water and gradually formed coal, which often preserves fossils. Coal was mined in several places in NW Arkansas, including near Baldwin, but never in great quantities.

21) Replica of a Trilobite

Trilobites were the first arthropod or jointed-leg animal. They were the earliest ancestors of crayfish, shrimp, crabs, spiders, scorpions, millipedes, centipedes, and insects. Like those animals, the trilobite was supported by its hard outer shell, or skeleton, which becomes the fossil. The animal might have died or the shell might have been shed as it was growing. The shells often curled before fossilization. These are common fossils in parts of the world. There are so many different types of trilobites that paleontologists can use them as an "index fossil." They can tell how old a rock is by what type of trilobite it contains. Many have distinctive spines or large compound eyes that make them easier to identify.

21) Sample of Boone Formation

This rock is from the Boone formation, a local formation which weathers to a red color, has a brachiopod shell impression which is difficult to see. Many objects appear to be fossils but are just designs caused by weathering and erosion.

HANDS-ON ITEMS:

Bag containing 27 fossil replicas (some plastic)

Bag containing clay to create your own fossils

Plastic clay molds

Book - *National Audubon Society Field Guide to North American Fossils*

Book - *Rocks, Fossils and Arrowheads*

Book - *Fossil* (Eyewitness Books by Dr. Paul D. Taylor)

Sources used for this information:

National Audubon Society Field Guide to North American Fossils

www.paleodirect.com

www.en.wikipedia.org

www.britannica.com

www.fossils-facts-and-finds.com