

Collecting Fossils in Arkansas

Fossil collecting is a fun activity that should be approached responsibly. Arkansas has many locations that offer great opportunities to collect fossils. The best places to search include roadside outcrops, stream cuts and old quarries. Fossils are the property of the land owner. Always ask permission before entering private property. Vertebrate fossils are protected on most public land but invertebrate remains are usually available for collection. If you are unsure about the regulations on public land, please contact the agency in charge of the land on which you wish to collect. State and National Parks are off limits.

Remember to be safe when collecting fossils. Proper clothing, including footwear, gloves and safety glasses are essential. Always be mindful of traffic, and in the summer time beware of snakes, spiders, ticks and chiggers. Most importantly, have fun, but be patient and careful when you collect.

The tools you will need



A good rock hammer (not a nail hammer), chisel, safety glasses, sample bags, labels, markers and maps are essential tools for fossil collecting. It is very important to properly note your collecting location. Many collectors lose vital information about their fossil finds by forgetting to take good notes. Here are some helpful hints:

What to write down: A good scientist takes good notes.

Geographic location:

- ✓ Take a GPS reading
- ✓ A legal description (State, county, topo quad, section, township, range, ..)
- ✓ Verbal description (“200 feet southwest of the bridge over Peyton Creek”)
- ✓ Keep a record of land owners contact information

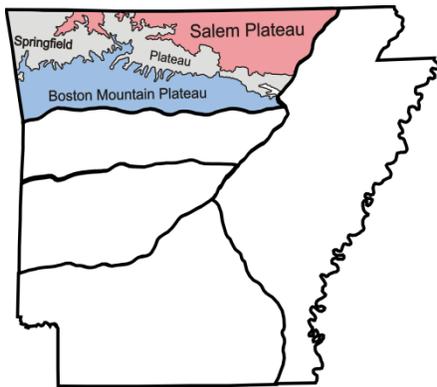
Geological Information:

- ✓ Rock type (For example, “cherty limestone, sandstone, shale, micrite, etc..”)
- ✓ Geological formation (This can be determined by finding your location on a Geological Map of Arkansas. For further details about Geological Formation consult the “Stratigraphic Summary of Arkansas”)
- ✓ Keep a field journal with you when you collect. Record your observations, draw pictures of what you find, take pictures and measurements.



What to know before you go

Arkansas is divided into 5 physiographic regions based on geology. Fossil collecting is possible in all regions, but it is important to have a handle on Arkansas geology before you head into the field. A little research before you go never hurts. Here is a helpful overview of Arkansas geology by region.



The Ozark Plateaus

The geology of the Ozark Plateaus Region is characterized by sedimentary rock deposited mostly by shallow marine seas (where a variety of animals could live) from the Ordovician through the Pennsylvanian Period making this the most fossiliferous region in the state.

The **Salem Plateau** contains the oldest rock present and is made up of dolostone, limestone and sandstone of Ordovician age. Algal structures called stromatolites, corals, brachiopods, bryozoa, crinoids, gastropods, and some cephalopods are the fossils most commonly found in the limestone and dolostone. Trilobite fragments are less common but are present in these strata. The St. Peter Sandstone contains the vertical trace fossil *Skolithos*. Silurian and Devonian strata are limited in their outcrop area. Silurian limestones contain crinoids, trilobite fragments, and small algal mounds. Devonian strata are usually unfossiliferous.

The **Springfield Plateau** is made up of limestone, sandstone, shale, and chert from the Mississippian Period. Corals, bryozoa, brachiopods, crinoids, bivalves, cephalopod, and gastropods are common in these rock types. Trilobite fragments are less common but are present in these rock types as well. Echinoid fragments are present in the Boone Formation. Starfish and bivalve resting traces called *Asteriacites* and *Lockeia* respectively, and worm trails are common at certain localities in the Batesville Sandstone.

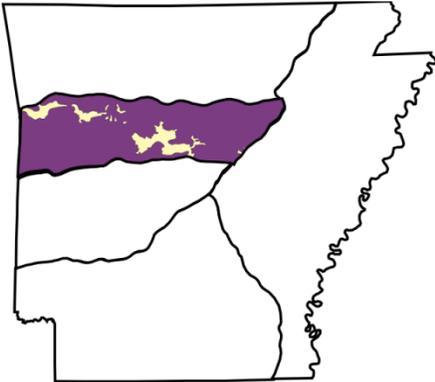
Mississippian age shales offer the easiest collecting of fossils in the Ozark Plateau Region. Shale weathers rapidly to mud, which washes away leaving the fossils behind. There are three major Mississippian age fossiliferous shale units in north Arkansas. From oldest to youngest they are the Moorefield Shale; the Fayetteville Shale; and the Imo member of the Pitkin Formation.

Fayetteville and Moorefield Shales – Ammonoids and nautiloids are the most common fossils present. Fossil fauna in the Fayetteville Shale are often replaced by iron sulfide (pyrite). Plant fossils are less common in the Fayetteville Shale but are present locally.

Imo member of Pitkin Limestone – This unit outcrops in limited areas of Searcy and Van Buren Counties. It contains an abundant, diverse, and well preserved fauna including ammonoids, nautiloids, bivalves, brachiopods, bryozoan, plant material, blastoids, crinoids, gastropods, shark teeth, and trilobites. Plant fossils are also present in this unit.

The **Boston Mts. Plateau** is made up of Pennsylvanian age rocks. It contains mostly sandstone, siltstone, and shale, however limestone is present at various localities. Trace fossils such as *Conostichus*, *Zoophycus*, and *Asterosoma* are most commonly found in sandstone and siltstone of this region. Plant fossils are not abundant but are present in the sandstone, siltstone, and shale. Limestone in this region is usually fossiliferous and contains crinoids, blastoids, bryozoa, brachiopods, corals, and ammonoids.

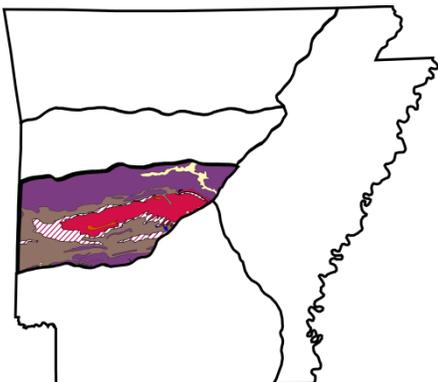
Arkansas River Valley



The Arkansas River Valley is characterized by sedimentary rocks deposited by river systems flowing from the north and east during the Pennsylvanian Period. This area represents the northern extent of the Ouachita orogenic (mountain building) system in Arkansas. Once flat-lying, these Pennsylvanian sedimentary rocks have been compressed into well-developed east-west trending open folds (anticlines and synclines) and faults, which gradually diminish northward into the Ozark Plateau Region. Pennsylvanian sandstones, shales

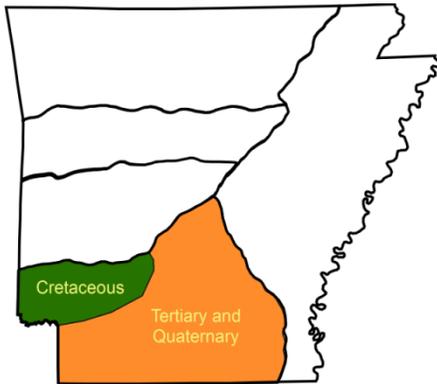
and siltstones often contain abundant plant fossils. *Lepidodendron*, *Calamities*, *Stigmaria*, and fossil ferns may be discovered. Trace fossils such as *Conostichus* are present locally in siltstones in the area. Sandstones at various localities contain ammonoids, crinoids, gastropods, brachiopods, and bivalves.

Ouachita Mountains



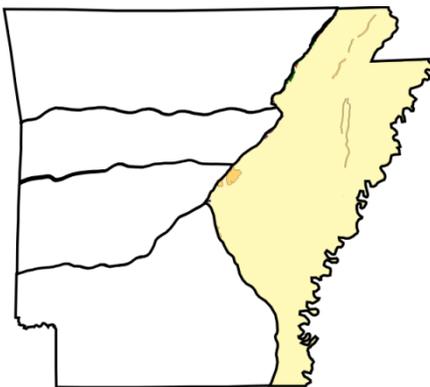
The Ouachita Mountains Region contains thick sequences of sedimentary rocks deposited in a deep ocean basin that have been uplifted and compressed northward into east-west trending complex folds (anticlines and synclines) and thrust faults due to major orogenic (mountain building) processes. The most intensely deformed area is in the central portion of the fold belt. The rocks in the Ouachita Mountains

are sparsely fossiliferous but some units, notably the Ordovician age Womble Shale, contain graptolites. At one locality, trilobites are present and date the oldest rocks in Arkansas in the central Ouachitas. Worm trails are present in shale at various localities.



West Gulf Coastal Plain

The West Gulf Coastal Plain is characterized by gently southward-dipping sedimentary rocks deposited mostly in shallow marine water of the Gulf of Mexico that once extended into Arkansas. The area in orange consists of Tertiary clays, sands and silts with lignite deposits and Quaternary gravels, sands and clays. The area in green consists of Cretaceous age formations. Some of the Cretaceous units are very rich in fossils. Oyster, echinoid, gastropod and cephalopod fossils are most commonly found. The Cretaceous rocks are the only rocks outcropping in Arkansas that were deposited during the Age of Dinosaurs. It is only from these rocks that dinosaur fossils have ever been found in the state. In addition to the few dinosaur bones (*Arkansaurus fridayi*) a large number of dinosaur tracks are known from a Lower Cretaceous limestone that outcrops in a limited area. Other vertebrate fossils discovered in the area include shark teeth, mosasaur, reptile teeth and plates, and miscellaneous fish parts. Most of these rocks are not as hard as the Paleozoic rocks, so collecting is fairly easy. Petrified wood has been discovered in Quaternary terrace deposits and amber is present locally in Tertiary age deposits.



Mississippi Alluvial Plain

The geology of the Mississippi River Alluvial Plain is characterized by unconsolidated, flat-lying alluvium from present day and older streams, overlying poorly consolidated Tertiary formations. Petrified wood is occasionally found associated with gravel deposits of Quaternary age in the Mississippi River Alluvial Plain. Ice age mammal fossils such as mammoth, mastodon, dire wolf, saber-tooth cat, bear, ground sloth, peccary, and more have also been discovered in gravels of the Mississippi River. Oysters, gastropods, bivalves, shark and ray teeth, and plant fossils are present in Eocene age formations along Crowley's Ridge.

