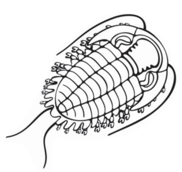
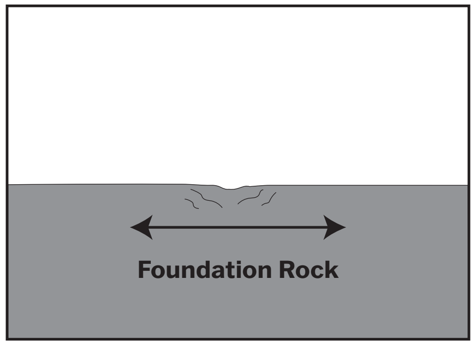
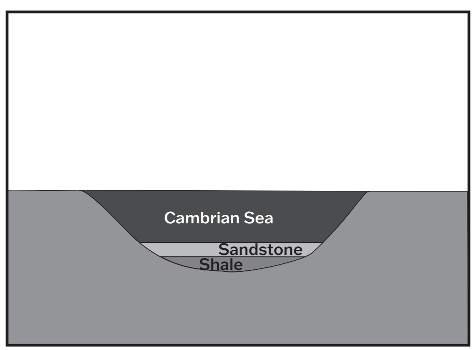
## 550 Million Years Ago
### Cambrian Period
### Age of the Trilobite



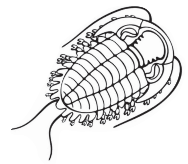
**Forces deep within the earth begin pulling apart the ancient "foundation" rock that made up the original land area of the Wichita Mountains.**




**This pulling action creates a large depression in the earth's surface, which fills with water from the Cambrian Sea. Mud and sand partially fill this depression. Over time this sediment is compresses into shale and sandstone under the weight of additional sediment.**

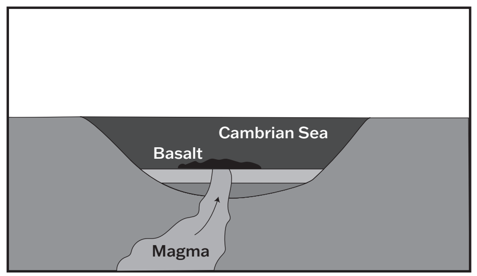



## 525 Million Years Ago
### Cambrian Period
### Age of the Trilobite



**Due to the continued stretching of the earth's surface, rock deep in the earth's crust melts to create magma. This magma is forced up through the foundation rock and the sandstone-shale layer. Magma that empties into the water of the bay cools rapidly and becomes basalt.**

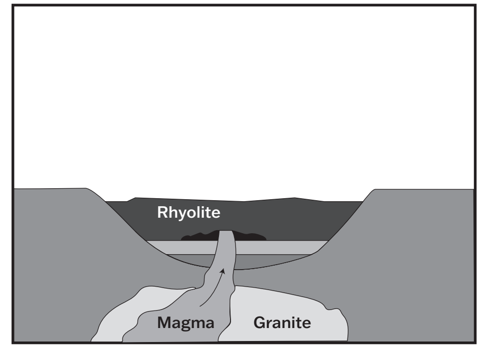
*The basalt has long since eroded away and no outcrops are available for viewing locally.*




**Large amounts of magma did not reach the surface. Instead, it slowly cooled deep in the earth to form a rock called gabbro.**

*Locally, gabbro is called "black granite." An outcrop of gabbro can be seen east of Roosevelt, OK on SH 19.*

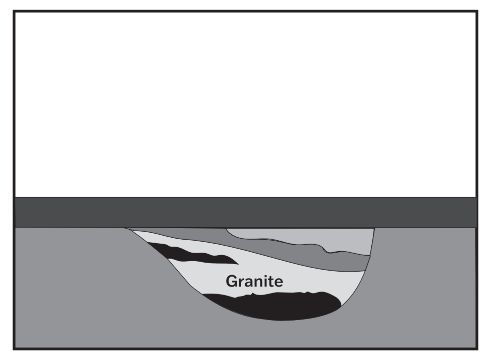
**Near the end of the period of basalt and gabbro formation, another magma was formed. This magma formed from the melting of foundation rock. It poured out over the basalt at the surface to form rhyolite. This rock is usually deposited on dry land indicating that the Cambrian Sea had receded.**




*The rhyolite in the western edge of the Wichita Mountains range has since eroded away. The Wichita Mountains Wildlife Refuge does have several outcrops of rhyolite near their eastern boundary.*

**The magma that did not reach the surface and become rhyolite slowly cooled underground and formed granite. This pinkish-red rock is the most abundant rock in the park. The granite and gabbro formed a fairly solid block that resisted further movements of the earth.**

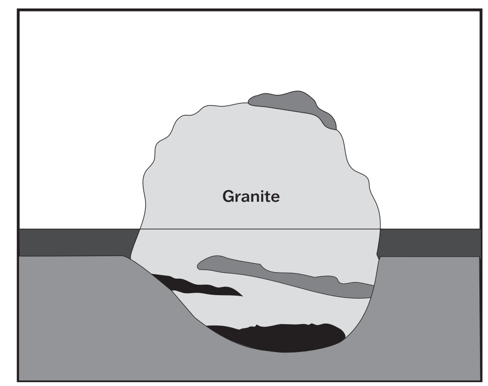
**During the rest of this period, shifting and settling of the earth's crust continued. Downward warping of the crust allowed the sea to once again cover this area. Sediments were deposited over the rock for a second time. The shifting and settling resulted in uneven layering of the rock.**




## 250 Million Years Ago
### Permian Period
### Age of the Amphibian

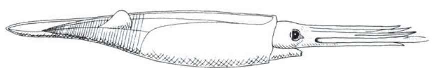
**At this time the area that had been pulling apart slowly began to squeeze back together. This pressure cracked and pushed the granite-gabbro block up to the earth's surface. Quartz Mountain, along with the rest of the Wichita Mountains became rocky islands jutting out of the water.**

*Wave cut terraces can be seen near the tops of the mountains south of Lake Altus-Lugert. The most noticeable terrace is between 2,130 and 2,150 feet.*

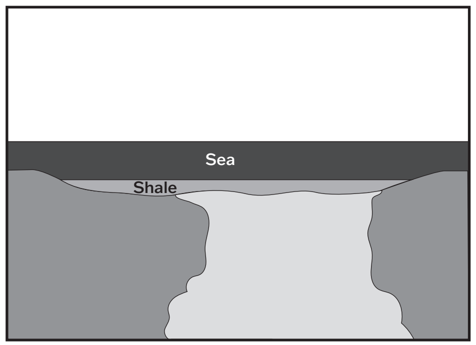



*The ammonite fossil in the Nature Center was found west of the park in the town of Mangum. During this time period Mangum was under the sea.*

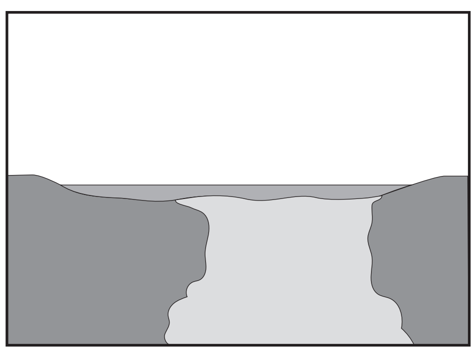
## 200 Million Years Ago
Jurassic Period
Age of the Belemnites



The movements of the earth's crust ended at this time, and the mountains were covered with layers of soft red shale.

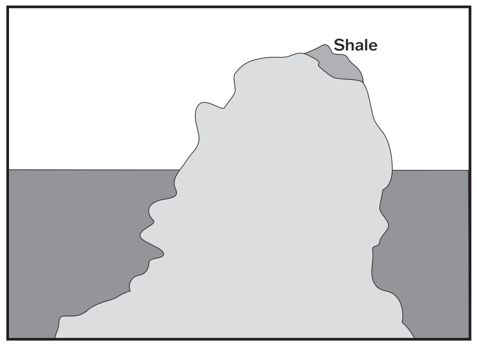



This shale protected the underlying rock from the actions of erosion, when the seas receded.

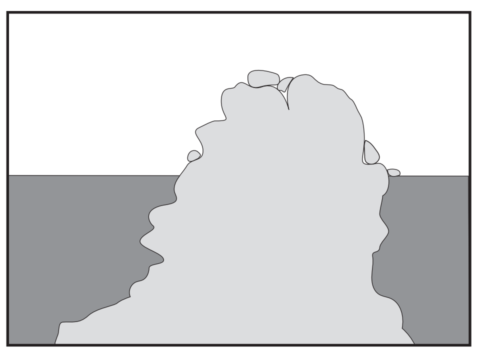


## 1 Million Years Ago
Quaternary Period
Age of Man

The earth's crust once again began to uplift, removing the soft shale layer on the mountains. Ever since this time the exposed rock has been acted upon by forces of erosion.




### Today
Many factors, such as wind and rain, ice and heat, continue the process of wearing away these ancient rocks.



## Common Geologic Questions

***Where is the quartz?***
Quartz is one mineral in the "mix" we call granite and it crystallizes at lower temperatures than some of the other minerals in granite. So it fills the small spaces between the other minerals in the granite matrix.

***Can we collect quartz crystals?***
No. Collection of any geologic or plant material is prohibited at Quartz Mountain State Park.

***Is the pinkish-red rock sandstone?***
The pinkish-red rock is granite.

***How tall is Quartz Mountain?***
The peak of Quartz Mountain is 2,040 feet above sea level. The base is at 1,520 feet above sea level. So if you climb Quartz Mountain you are climbing 520 feet.

***Why are the mountains so short?***
They are very old, the 2nd oldest mountain range in the United States. The Wichita's are older and shorter than the Appalachian Mountains.

***Which mountain is Mount Scott?***
Mount Scott is within the Wichita Mountains National Wildlife Refuge near Lawton, OK.

Quartz Mountain State Park
14722 Hwy. 44A
Lone Wolf, 73655
Phone (580)563-2238
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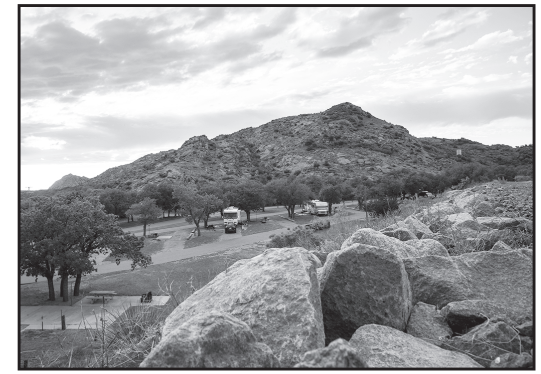
# Geologic History
## of Quartz Mountain State Park



Quartz Mountain is one mountain in the Wichita Mountain range. The Wichita Mountains currently stretch from Granite, OK (just 6 miles northwest of the Lodge) to Lawton, OK (about 65 miles southeast of the park). Most of the mountains in the Wichita Range rise 300 to 800 feet over the surrounding plains, but it hasn't always been this way...

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