

DINOSAURS IN WESTERN PENNSYLVANIA?

Question: Are there any dinosaurs in the Pittsburgh area?

Answer: Yes – the Carnegie Museum is full of them!

This isn't the answer people want to hear, of course. They want to be assured that great treasure troves of dinosaur bones lie scattered throughout the local rock formations, ripe for picking by anyone with a hammer, dental pick, and whisk broom – just like Alan Grant and his groupies in "Jurassic Park". Once they learn the truth, that the rocks of western Pennsylvania are at least 20 or 30 million years older than the oldest known dinosaur, they believe it is unfortunate that Pennsylvania doesn't live up to the standards set by such wonderful places as Wyoming and Colorado where you can bruise your knees tripping over intact *Tyrannosaurus* skulls or complete nests of *Maiasaurus* eggs any day of the week!! Who cares that Pennsylvania is rich with the fossilized remains of some of the most elegant seashells and land plants that ever graced the planet? People want dinosaurs, dinosaurs, and more dinosaurs!

We know that dinosaurs lived in Pennsylvania during the Mesozoic Era (Figure 1), that portion of geologic time commonly referred to as the Age of Dinosaurs. The footprints of dinosaurs have been found preserved in Triassic-age sandstones in several places in the Gettysburg area of south-central Pennsylvania.

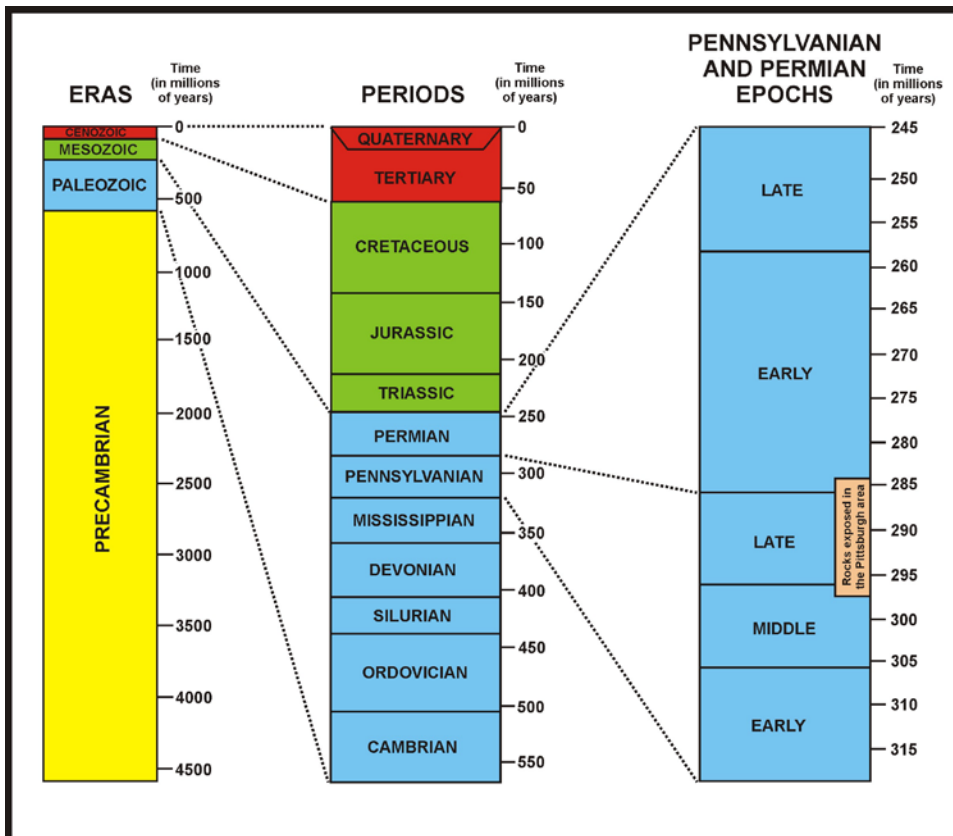


Figure 1. Eras and periods of geologic time illustrating the age of the rocks exposed in the Pittsburgh area. Time is in millions of years. The Mesozoic Era (in green) lasted about 180 million years, and is often called the Age of Dinosaurs. The orange rectangle on the right represents the age of the rocks exposed in the Pittsburgh area.

The physical aspects of western Pennsylvania during the Mesozoic should have been conducive to at least a few species of dinosaurs during the 180 million years of dinosaur reign. For most of the Mesozoic, the global climate was warm and tropical, although the eastern United States was probably arid for much of that time. Shallow seas covered areas of land that were low in elevation. In fact, during the Cretaceous Period, shallow inland seas covered much of North America (Figure 2). As a result of this moisture source, and the prevailing westerly winds, western Pennsylvania should have been warm and humid in the Cretaceous, during the time of *Tyrannosaurus rex*. The climate would have been ideal for tropical forests and swamps adjacent to rivers that carried sediment from the eroding Allegheny Mountains to the east. Distinctive plants like ferns, cycads, and conifers probably characterized the landscape. The first flowering plants appeared during the Cretaceous period. It would have been a paradise for the creatures that feasted on the forests and swamps. And to the creatures that feasted on THEM. Western Pennsylvania should have been teeming with dinosaurs during the Cretaceous.

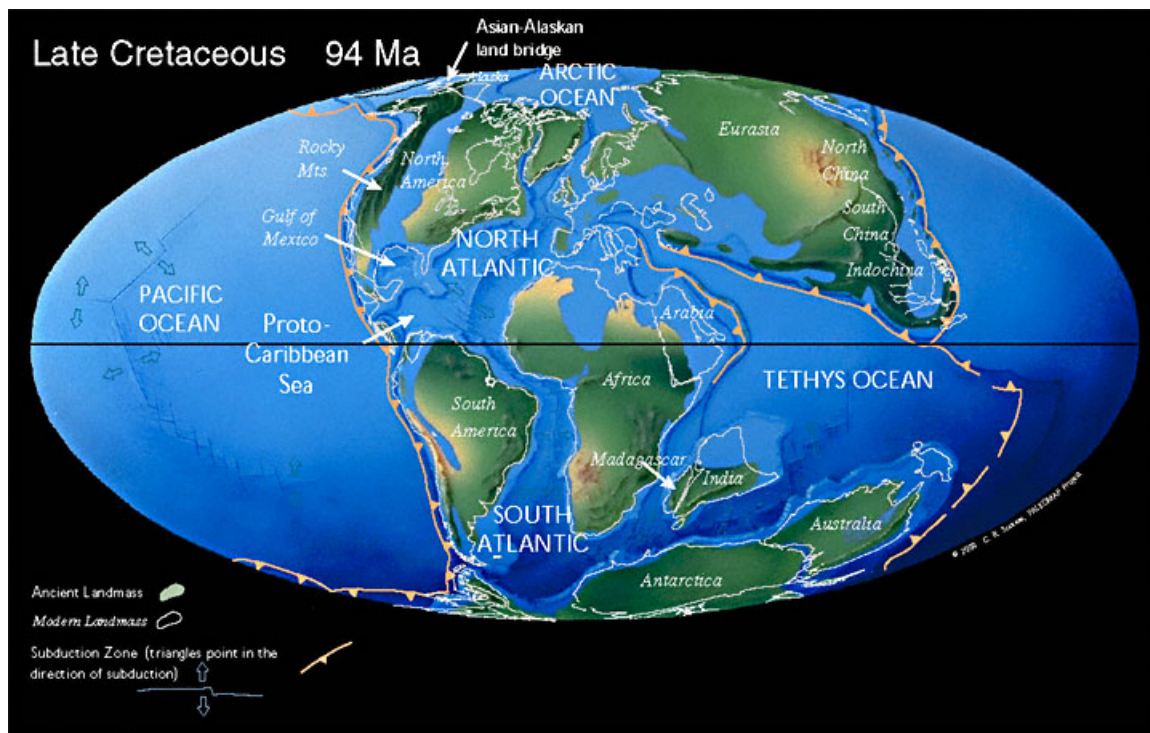


Figure 2. Paleogeographic map of Earth during the Late Cretaceous, about 94 million years ago. From <http://www.scotese.com/earth.htm>.

So, why are there no dinosaur remains to be found anywhere in Pennsylvania's rock layers, other than in Triassic rocks of the Gettysburg area. There are no teeth, no bones, no skin impressions, no eggs – not even a fragment of a footprint. Why? Because the ground these fascinating creatures walked around on, and the rock layers their fossilized remains should be encased in, have long since been eroded and washed away.

That raises yet another question - where would those dinosaur fossils be if they hadn't been removed long ago? Based on many different kinds of scientific evidence gleaned over many years, it seems certain that western Pennsylvania, including the Pittsburgh area, was covered by more than one mile of rock and sediment during the early part of the Mesozoic. As the great Allegheny Mountain range was forming in the Late Paleozoic and Early Mesozoic from the collision of what are now North America and Africa, it was also being eroded. Streams drained the mountains, carrying vast amounts of sediment across eastern North America to Canada and beyond. It took 250 million years to erode the Alleghenies from Himalayan heights down to the low ridges that now cross central Pennsylvania. During the first few tens of millions of years of that process, the streams left much of their sediment load deposited as a vast alluvial plain a thousand or more miles long, hundreds of miles wide, and a mile or more thick. It took another 200 million years to carve out that mile-thick layer and flush it northwestward into and out of Canada. Considering that this former mile thick layer was a vast alluvial plain during the Age of Dinosaurs, and that alluvial plains are great places for plants to grow, it is reasonable to assume that western Pennsylvania was home to dinosaurs at one point or another.

The dinosaurs are long gone now; they left western Pennsylvania without a trace, and all that's left are remains in museums that were found in Wyoming and other western states. But they were probably here at one time, walking around on the ground about a mile overhead.

So, the next time you fly over the western Pennsylvania, take caution and remember . . . you're in dinosaur territory!

