

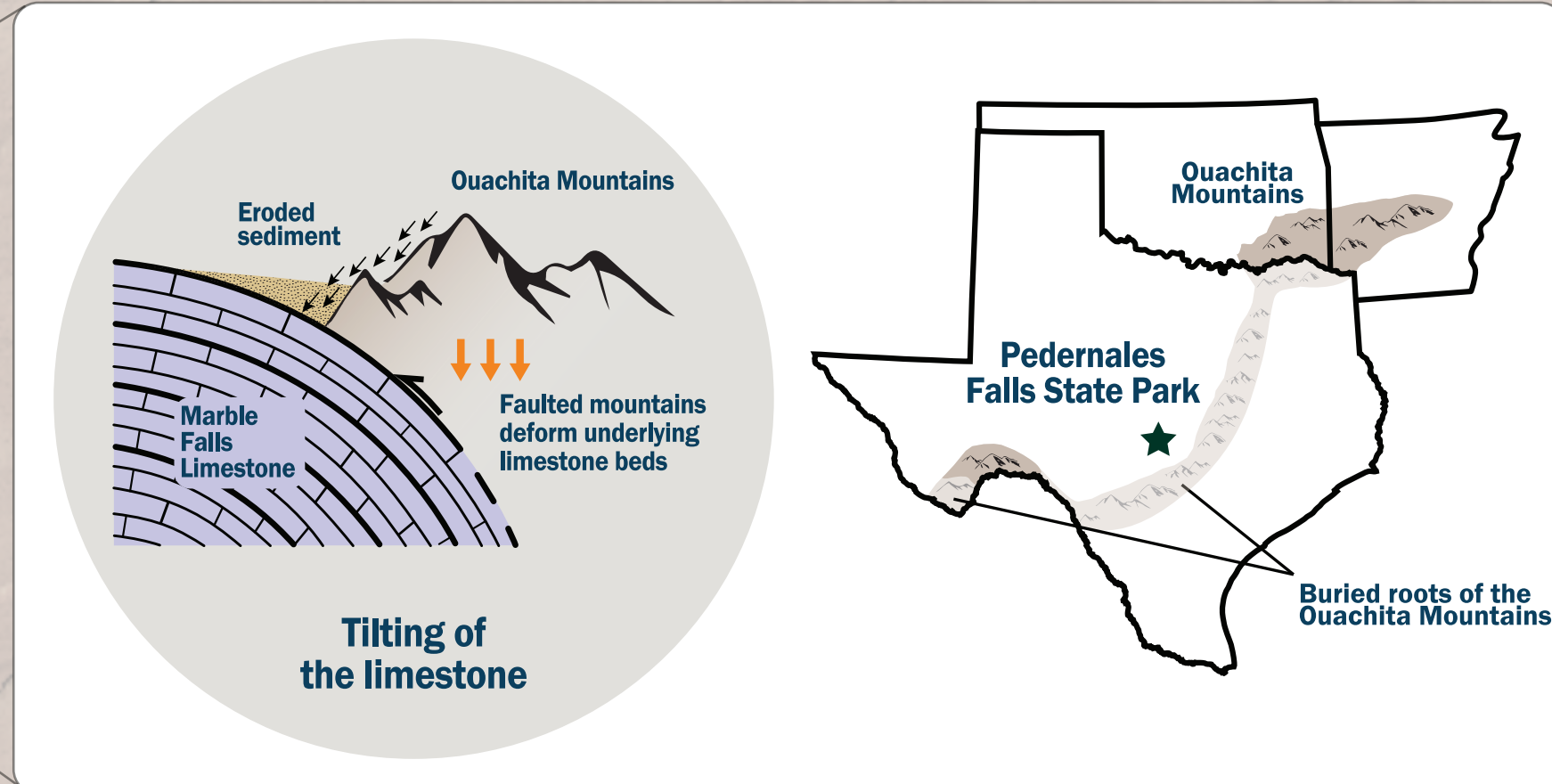
# Pedernales Falls — A Window to the Geologic Past

## TECTONIC FORCES AT WORK

Why are the rocks that form the falls tilted?



About 300 million years ago, all the continents on Earth converged and formed the supercontinent known as **Pangea**.

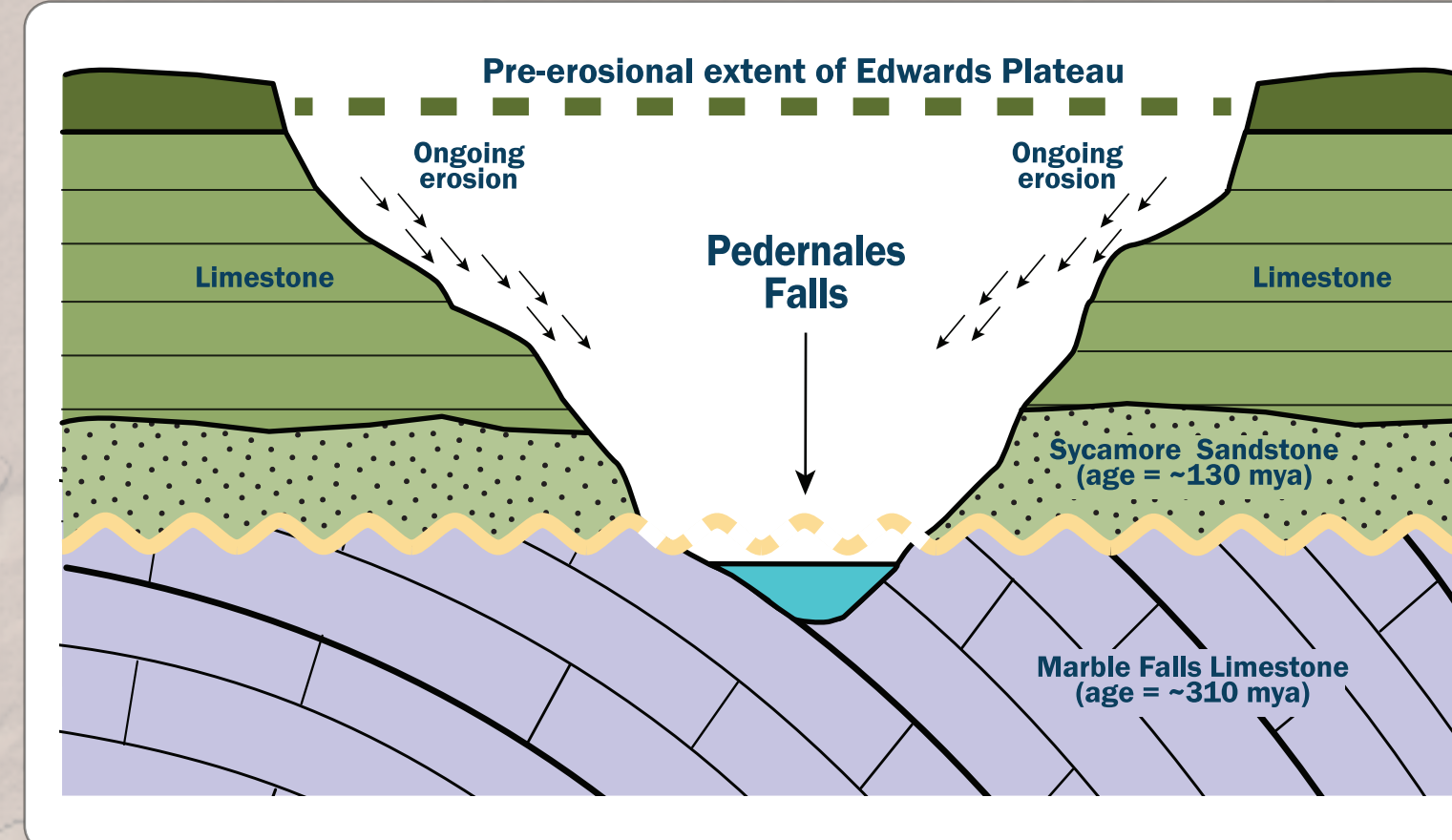


In Texas, Oklahoma, and Arkansas, tectonic forces created the **Ouachita Mountain Range**. The weight of the mountains and sediments shed off their western slopes compressed the rock strata, causing them to tilt about 15 degrees to the southeast.

Later, over millions of years, the Ouachita Mountains were eroded, sank, and were covered once again by the sea. Only their buried roots remain in Central Texas, lying just east of the park. Deformed and eroded, the tilted Marble Falls Limestone forms the falls we see today.

## EVOLUTION OF THE LANDSCAPE

Erosional forces break down and shape the land.

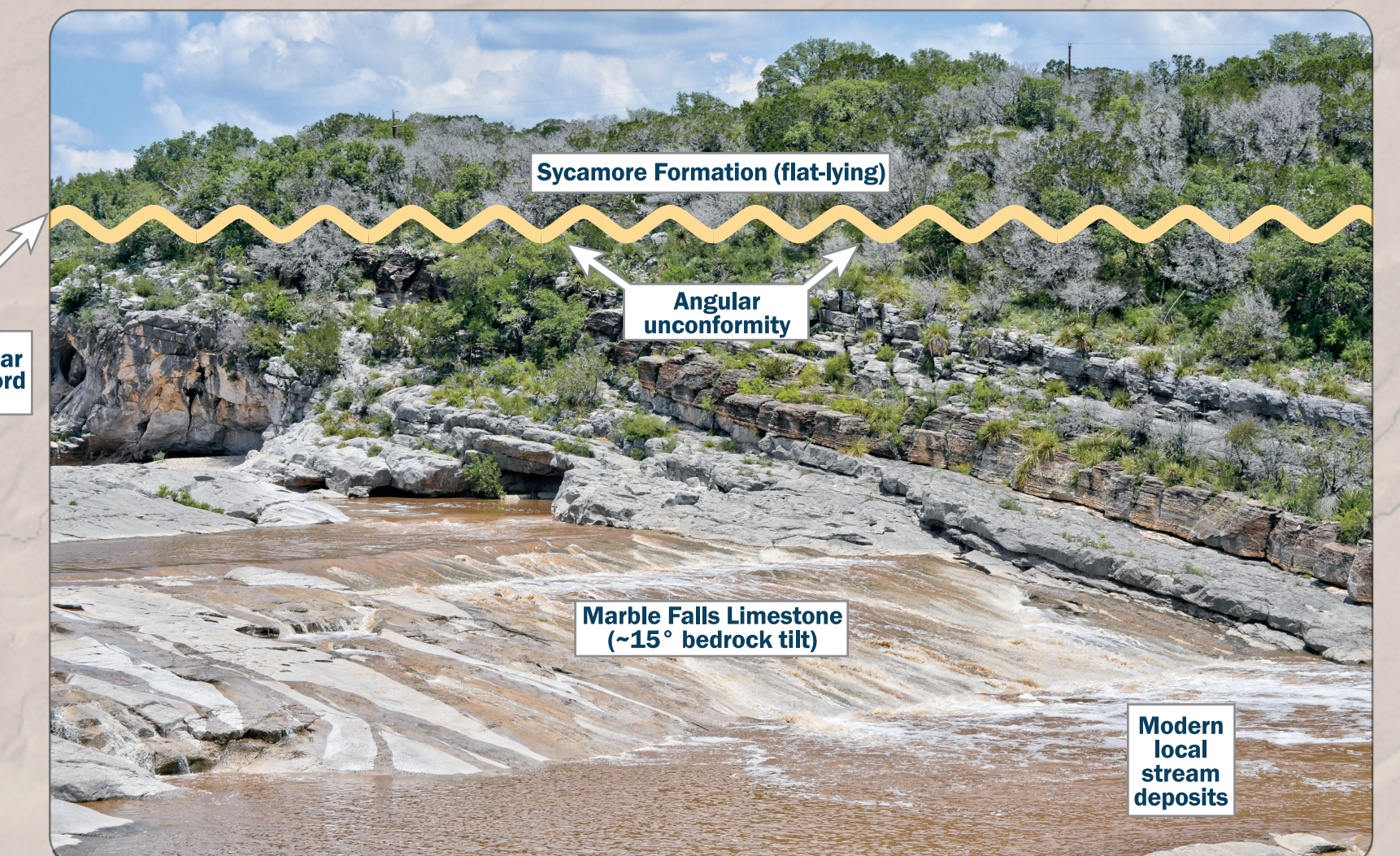


Pedernales Falls at Flood Stage

Rivers such as the Pedernales sculpt the landscape. At the falls, the erosion and transport of hundreds of feet of overlying rock provide us with a window into the geologic history of Texas back to about 310 million years ago (mya).

## EVIDENCE OF A MAJOR GAP IN THE ROCK RECORD

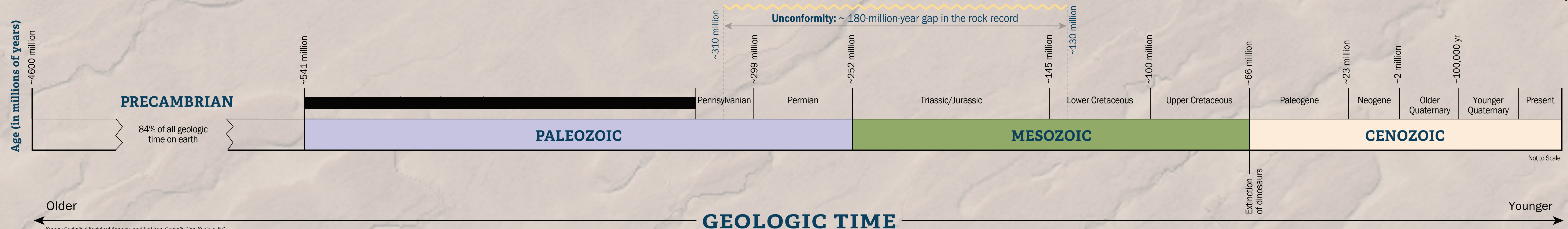
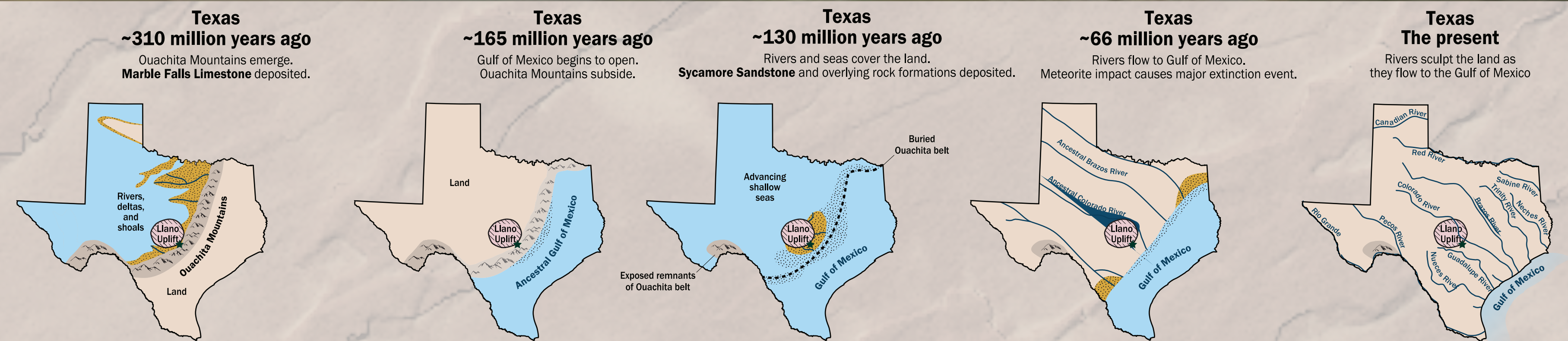
At Pedernales Falls, there is a gap in the rock record (**angular unconformity**) of about 180 million-years, indicating a period of erosion or non-deposition. Using the rock record at nearby locations, we conclude that much of what we now know as Central Texas was dry land during that time. The continental interior was separated from what later became the Gulf of Mexico by an extended belt of the ancient Ouachita Mountains.



Geology and photo: Bureau of Economic Geology

## TEXAS THROUGH TIME

These maps illustrate the locations of land, sea, rivers, and mountains in the geologic history of Texas in this region. Over billions of years, mountain ranges have been uplifted, then eroded. Oceans have opened, then closed. Sea levels have risen, then fallen. The key to understanding such change is time. Small changes over long periods of time result in large changes to the Earth.



The primary goal of the Texas GeoSign program is to establish a network of geologic information signs to engage and educate people about the geologic history of Texas when they visit parks, highway rest areas, and other public locations.

