

Fossil Butte

National Park Service
U.S. Department of the Interior

Fossil Butte National Monument
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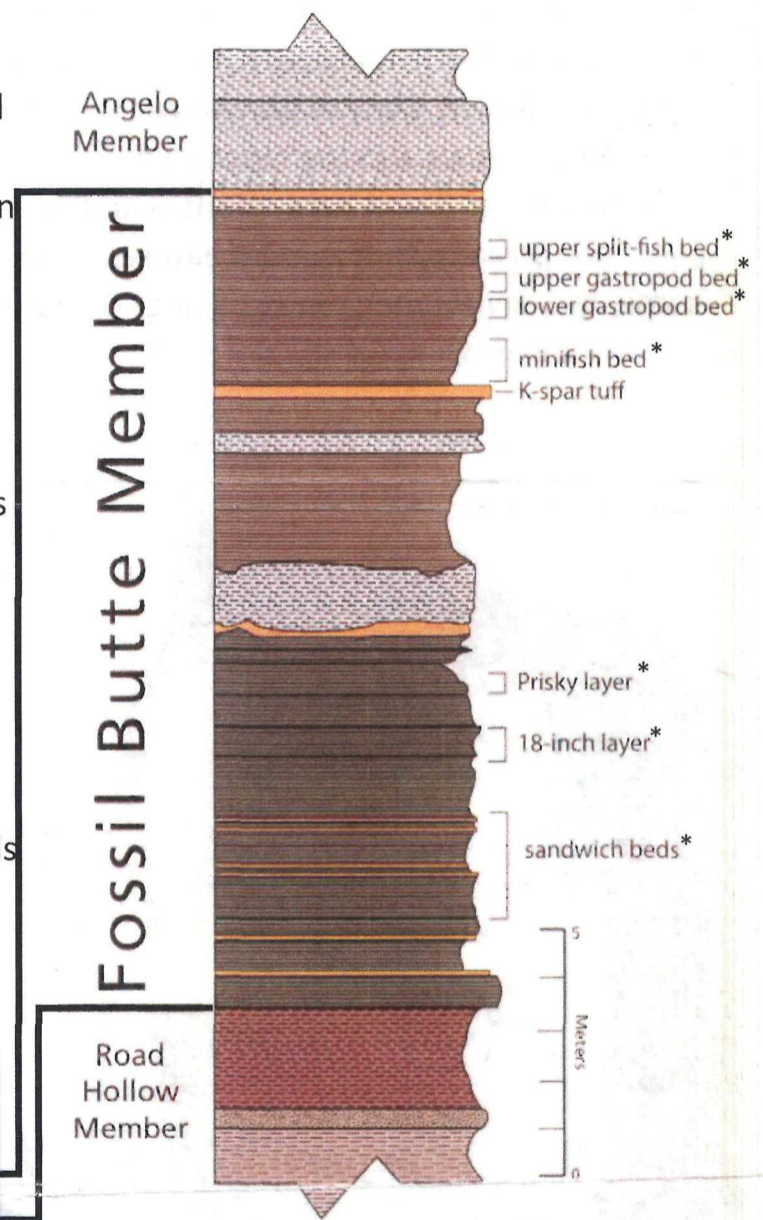
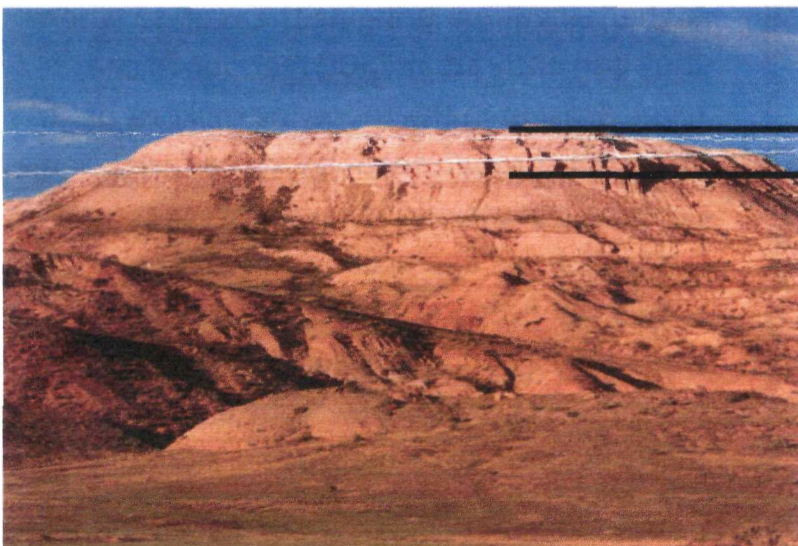


Geology of Fossil Butte

Here at Fossil Butte, the many rock layers are like pages in a book, making up a chapter in the history of life. Using the rocks and the fossils from the Fossil Butte Member of the Green River Formation, we can learn about the environment that existed in this area 52 million years ago. The different rock formations present here also tell us how the area changed over time.

The Green River Formation

The Green River Formation is made up of laminated (layered) limestone that was deposited as mud at the bottom of an ancient lake that existed 52 million years ago. The lake was slightly alkaline, meaning there were excess minerals in the water. These minerals settled out as mud, which over time compacted into layers of limestone. Within the layers, fishes, plants, and other fossils are encased just waiting to be discovered. The greatest numbers of fossils are found in the Minifish Bed (see right), but the largest and best-preserved specimens are known from the 18-Inch Layer. The differences in preservation are attributed to changes in the chemistry of the lake water over time. Combined with the diversity of life in the region and the stillness of the lake, extraordinary numbers of fossils can be found here.

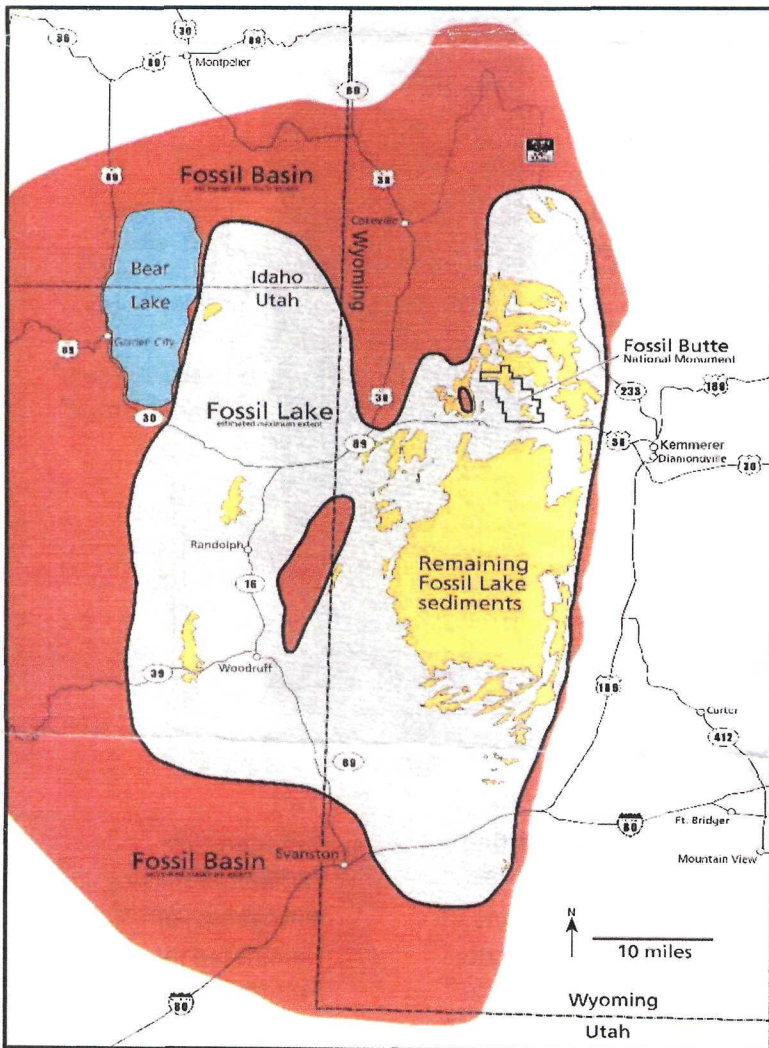
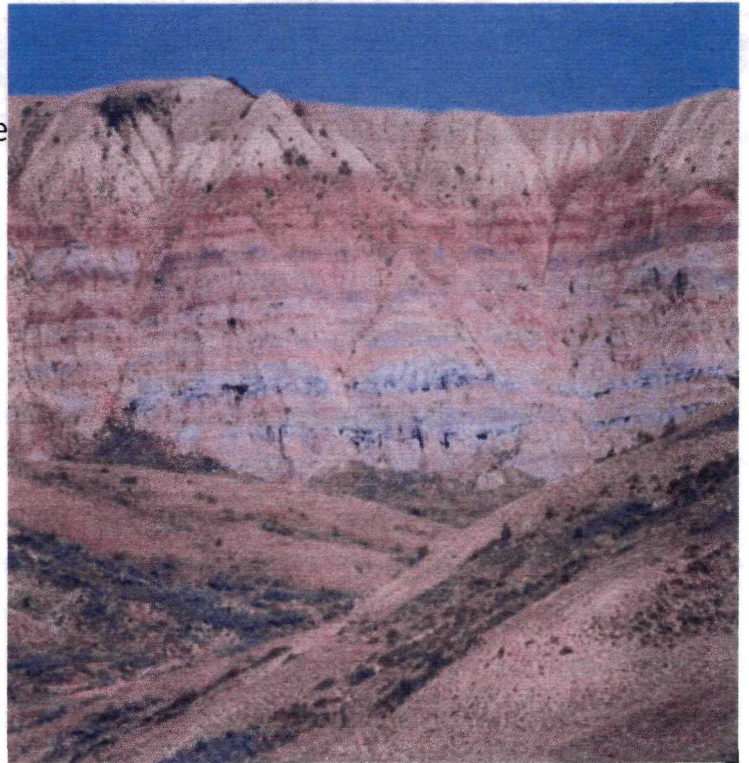


- | | | | |
|--|-------------|--|--------------------------------|
| | Siltstone | | Tuff |
| | Sandstone | | Kerogen-rich laminated micrite |
| | Mudstone | | Kerogen-poor laminated micrite |
| | Dolomicrite | | |

* indicates a fossil-bearing layer

The Wasatch Formation

The Wasatch Formation is notable for its distinctive red and brown coloration. Found above and below the Green River Formation, the Wasatch Formation shows what the environment was like before and after the lake existed, giving more information about how this area changed over time. Fossils are still found here, but not of fish. Unlike the Green River Formation, the Wasatch Formation comes from a more turbulent environment of rivers and streams. Fossils still form here, but they are not as well preserved. Early mammals such as small, lemur-like animals and the hippo-like *Coryphodon* are found here. Along with the rivers and streams that these creatures made home, the environment was still hot and humid, just like it was when Fossil Lake existed.



Above: The extent of Fossil Lake, and the remaining deposits from lake sediments.

The Big Picture

During the Eocene, the area of Fossil Butte was much warmer and wetter than today, with a climate similar to today's Gulf Coast states. Fossil Lake formed in Fossil Basin, a down-warped area caused by compression from the newly-formed Rocky Mountains. As the Rocky Mountains continued to be built, uplift pushed the lake deposits to a higher elevation, bringing them up to where they currently sit at 7500 feet above sea level. Erosion in the following millions of years cut through sections of the formation, creating the various valleys and isolated buttes seen in and around the monument today. Changes in climate over 52 million years led to a much cooler and drier environment, turning swamps and rainforest into dry sagebrush grassland.