These volunteers love to play in the dirt! Here, they're freeing an Apatosaurus pelvis bone from other dinosaur bones, including a Camarasaurus cervical rib.

Layers of Time

The Comanche National Grassland is internationally renowned for its dinosaur bones and tracks, including one of the largest assemblages of dinosaur trackways in the world. The geologic layers explored here also include fossils from giant amphibians, and sharks and other bony fish that flourished in shallow seas. These layers of time span from 250 to 87 million years ago (the Mesozoic Era).

Volunteers and Partners

Volunteers, researchers, and partnerships with professional organizations are the lifeblood of the Forest Service paleontology program. Partnering institutions such as the Denver Museum of Nature and Science conserve, store, and display fossils, and conduct research. Some fossils are excavated by volunteer groups working with the Forest Service. As a result, geological and paleontological discoveries in Picket Wire Canyonlands continue to be published for scientific and public interest.

Paleontological investigation of places such as the Comanche National Grassland is only beginning—and you can be a part of it! Volunteers have devoted thousands of hours to inventory, record, and preserve fossils on public lands.

Volunteer field projects allow the public to work alongside professional paleontologists. The fossils preserved by these projects then provide further opportunities for museum volunteers. Together, we grow our knowledge about astonishing places of the past.

A Denver Museum volunteer is using an air scribe to clean an Apatosaurus neck vertebrae. He's put in over 3,500 hours. Incredible!

Protecting Paleo Resources

The Purgatoire River—the same force that unearthed the Dinosaur Tracksite—has since begun to erode it away. Protecting the site is an ongoing challenge given the river's unpredictable flash floods. The Forest Service is working to control erosion so that opportunities for future generations to visit this famous place are not washed away.

The exposed tracks probably represent only a fraction of the tracks still buried here. This backhoe is placing blocks to deflect the river's erosive power.

Can I Take A Fossil Home With Me?

Many important fossil localities—such as Picket Wire Canyonlands—are closed to ***all*** collecting without a permit.

However, small samples of ***common invertebrate and plant fossils*** can be collected from other areas on national forests and grasslands without a permit. Check with local land management offices for details, and with local schools and museums about opportunities to collect fossils with paleontologists as part of a volunteer project.

Visit http://www.fs.fed.us/geology/ for more information about collecting fossils.

Fossils can be used to date rock layers. This clam impression (Mytiloides labiatus) is about 93 million years old. WOW

Front cover: An Apatosaurus shoulder blade nearly 8 feet in length was discovered at the Picket Wire Canyonlands. It belonged to an animal roughly 100 feet in length.

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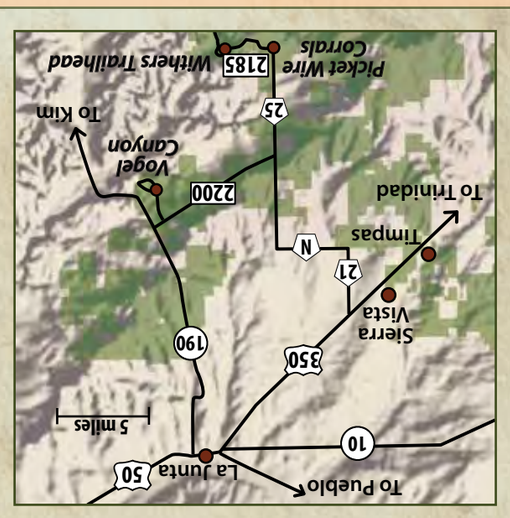


For More Information

Comanche National Grassland
1420 E. 3rd St.
La Junta, CO 81050
719.384.2181
http://www.fs.usda.gov/main/psicc/home

Know Before You Go

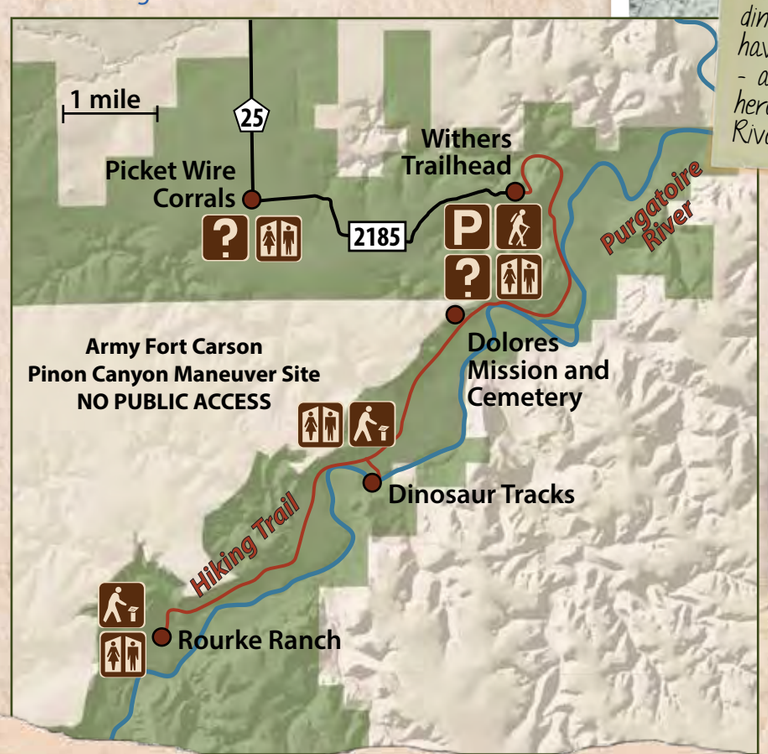
- Begin with a full tank of gas, a spare tire, and a map.
- Be prepared for sudden weather changes, extreme summer heat, and limited cell phone coverage.
- There is no drinking water available.
- Canyon trails are for hiking, mountain biking, and horseback riding only.
- Picket Wire Canyonlands is closed from dusk until dawn - overnight camping is not allowed.
- *Tread Lightly!* and leave no trace of your visit.

EXPLORE!

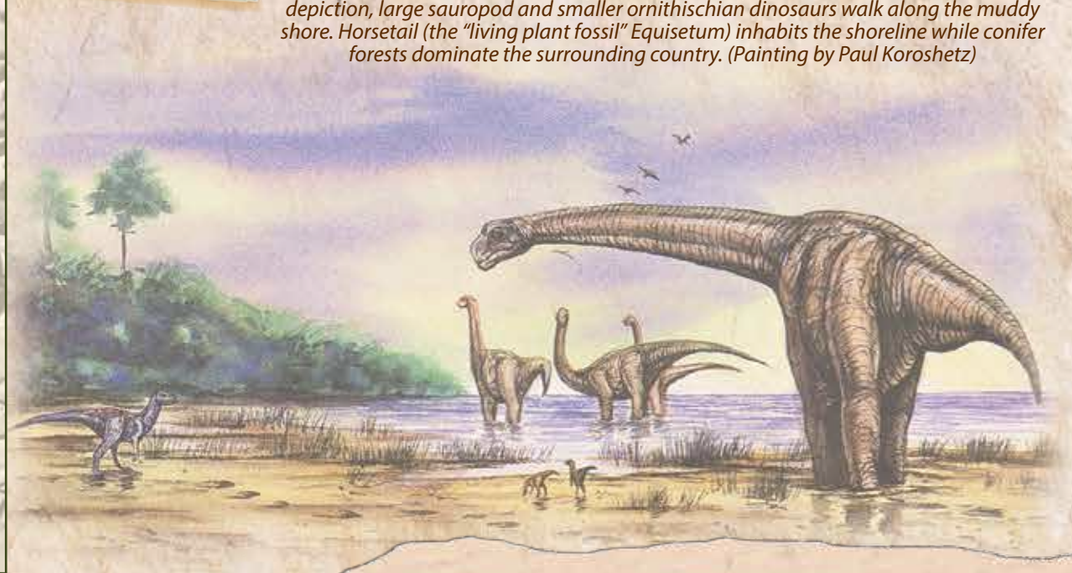
The round trip hike to the Dinosaur Tracks is 11.3 miles, starting at the Withers Canyon Trailhead. From here, you will descend 250 feet into the canyon. The Picket Wire Trail passes several points of interest enroute to the tracksite.

If you have a high-clearance four-wheel drive vehicle, guided auto tours to Picket Wire Canyonlands are available with the Forest Service. Advance reservations are required and there is a fee. For more information contact the Comanche National Grassland office at 719.384.2181, or visit: *http://www.fs.usda.gov/goto/psicc/com;* or *http://www.recreation.gov.*

This aerial photo captures the magic of the tracksite - parallel tracks of sauropod dinosaurs. They must have been herd animals - a discovery made right here at the Purgatoire River in the 1930s!



During the Jurassic Period, the Purgatoire River valley was a shallow inland lake. In this depiction, large sauropod and smaller ornithischian dinosaurs walk along the muddy shore. Horsetail (the "living plant fossil" Equisetum) inhabits the shoreline while conifer forests dominate the surrounding country. (Painting by Paul Koroshetz)



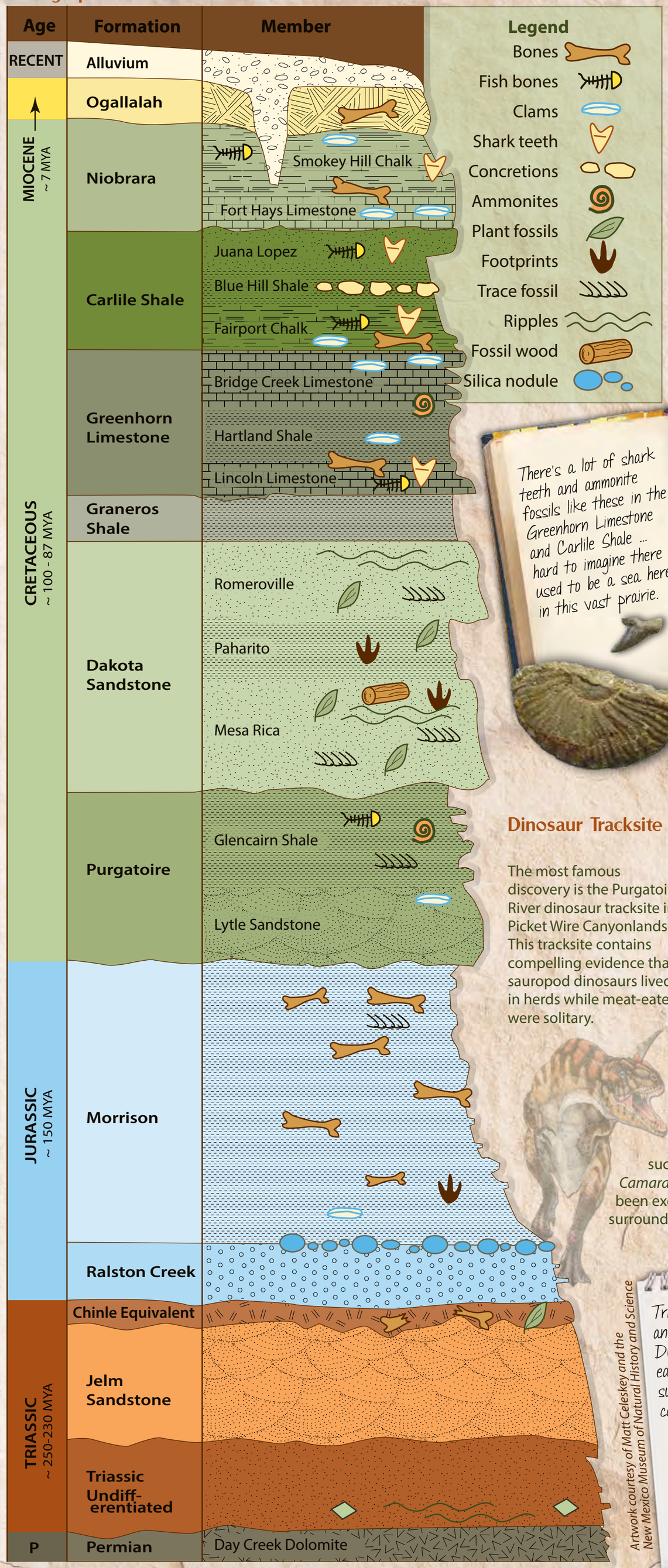
Set in Stone

Learning from Layers of Geology on the Comanche National Grassland

Includes the *Picket Wire Canyonlands Dinosaur Tracksite*

Pike and San Isabel National Forests
Comanche and Cimarron National Grasslands

Stratigraphic Column of the Comanche National Grassland



Learning from the Layers

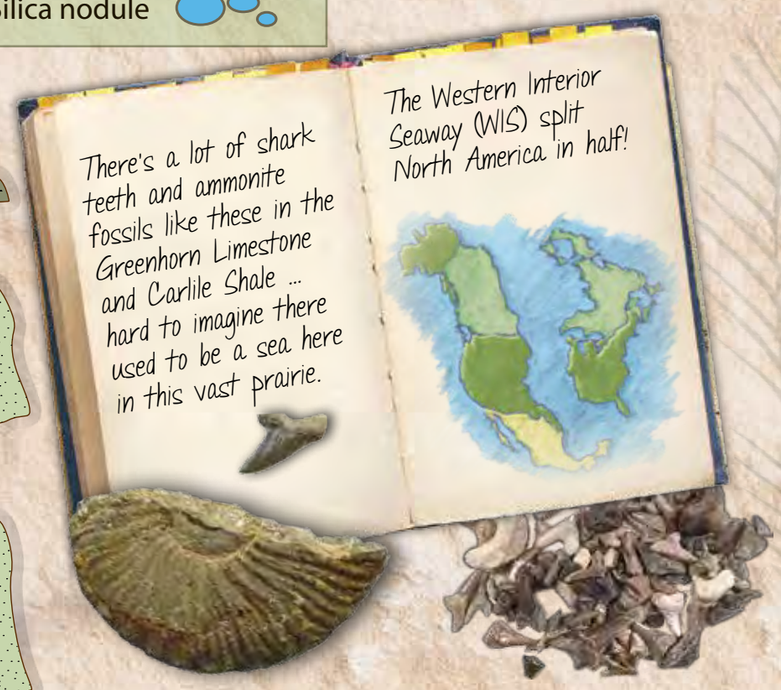
The layers of earth on the Comanche National Grassland have much to teach us about our home planet and its transformations over the eons. Can these perspectives on time and change help us contemplate its future? Absolutely! Even questions about climate change and global warming can be explored in the fossil record.

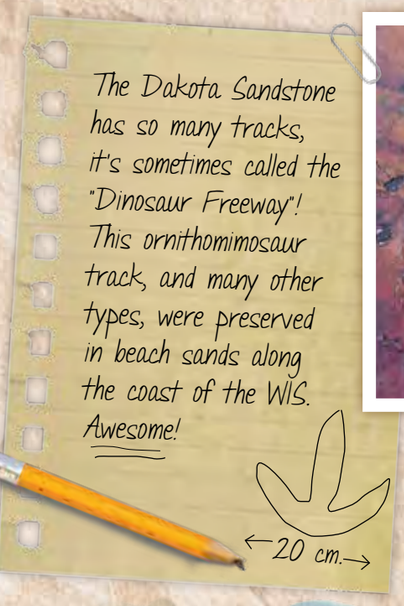
Today the Purgatoire River is a deeply carved, rugged, and arid landscape, but imagine this same area as a lush conifer forest or a tropical sea. The fossils and landforms of this area are as distinctive a part of the landscape today as the vanished plants, animals, and ecosystems they represent.

Ripples in this sandstone indicate it was formed in a shallow sea.

How to Read a Rock

We know about past environments because the geologic strata and their fossils tell us what kinds of animals lived here and what their environment was like. The type of rock is only part of the story. Shallow marine environments often produce sandstone layers with abundant ripple marks and bits of fossil shell. However, sandstones can also form in vast desert dunes. By interpreting the geometry of the rock unit, its internal fabric and its fossils, geologists can learn about the ancient environment in which it was created.





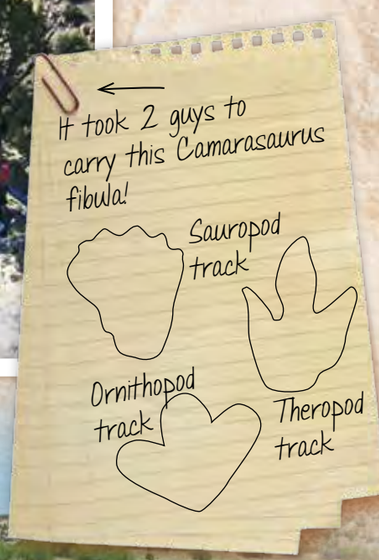
Dinosaur Tracksite

The most famous discovery is the Purgatoire River dinosaur tracksite in Picket Wire Canyonlands. This tracksite contains compelling evidence that sauropod dinosaurs lived in herds while meat-eaters were solitary.

Excavating the tail of a Camarasaurus

Over 1,300 prints in 100 separate trackways extend across a quarter mile expanse of bedrock where they were preserved—frozen in time—for 150 million years.

Skeletons of many famous dinosaurs such as *Apatosaurus, Allosaurus, Camarasaurus,* and *Diplodocus* have been excavated from the canyon walls surrounding the trackway.



Artwork courtesy of Matt Celeskey and the New Mexico Museum of Natural History and Science

Rainwater beautifully highlights these sauropod tracks.