

Geology Happenings

In Celebration of Moab's Fossils: Petrified Wood

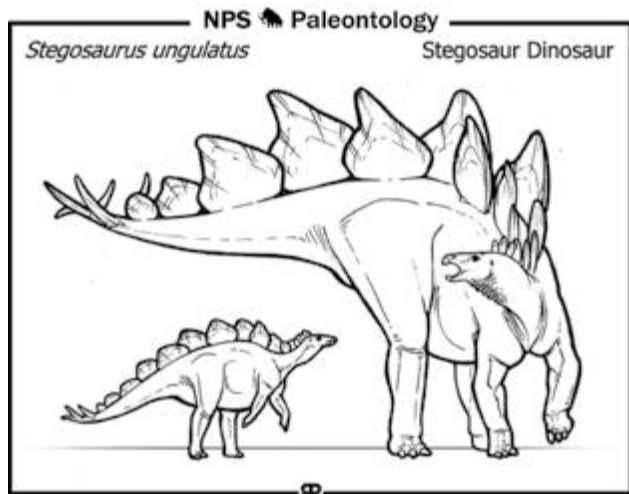
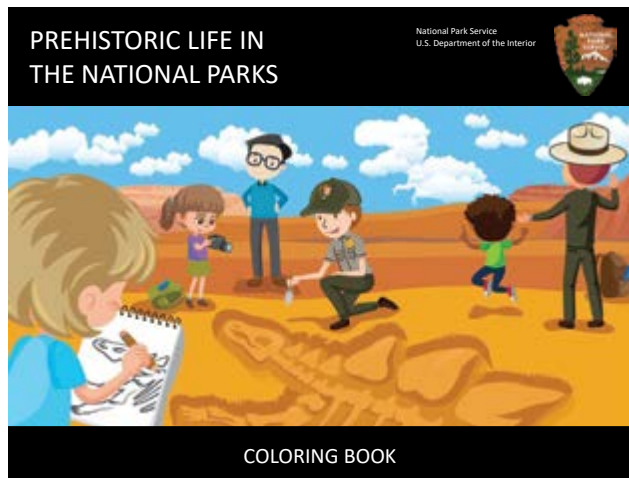
by Allyson Mathis

National Fossil Day is celebrated in October each year to highlight the scientific and educational value of paleontology and the importance of preserving fossils for future generations. Given the realities of Covid-19, National Fossil Day planners have foregone a large public event this year. Still, everyone near Moab can have their own National Fossil Day commemoration by experiencing fossils in the “wild” as they are out enjoying canyon country (of course, in a safe and socially-distanced way).



National Fossil Day is October 14th. To learn more, visit <https://www.nps.gov/subjects/fossilday/index.htm>

Fossils are the remains or evidence of living organisms from the geologic past. Most often, only the hard parts (e.g., bones, teeth, shells, or wood) of animals and plants remain as fossils since their durability means that they are more likely to be buried by sediment before they rot, are scavenged, or break apart. Therefore, paleontologists have to reconstruct entire animals and plants from evidence that is sometimes fragmentary. Just like dinosaurs were clearly more than just bones, ancient trees were more than the wood preserved from their trunks and branches.



The Prehistoric Life of the National Parks Coloring Book is being released for this year's National Fossil Day. You can download coloring pages or the whole book at <https://www.nps.gov/subjects/fossils/coloring-book.htm>

Within the realm of paleontology, the Moab area is best known for its dinosaur fossils, although different types of invertebrate shell fossils and petrified wood are found in the area. The best places to see dinosaur fossils on public lands near Moab are two interpretive trails approximately 15 miles north of town. Dinosaur bone fossils can be seen along the Mill Canyon Dinosaur Trail. And the Mill Canyon Dinosaur Tracksite includes more than 200 individual tracks that have been discovered from several types of dinosaurs.

The understanding of ancient life would be incomplete if the study of paleontology only focused on the remains of large animals, regardless of the awe that dinosaurs inspire. For example, marine invertebrates help geologists understand varying oceanic and coastal environments as some species only lived in deep water, others in shallow water, and still others in the brackish water of an estuary. Likewise, plant fossils help geologists understand terrestrial environments.

Fossil wood is the generic term for all wood found in the fossil record, no matter its type of preservation. Fossil wood has commonly been *petrified*, wherein the original organic material has been converted into stone. But some fossil wood has not been mineralized, sometimes looking like chunks of low-grade coal.



Petrified wood slice. National Park Service photo

Petrification usually consists of two interrelated processes, *permineralization* and *replacement*. Both take place after wood has been buried by sediment. Permineralization is the infilling of pores and other microcavities in organic tissues, and replacement is the substitution of inorganic minerals for the original organic material. These processes yield a three-dimensional representation of the original wood, sometimes preserving details on the cellular level.



Most petrified wood near Moab is in small pieces.

Circulating groundwater is usually the source for the minerals that are deposited during petrification. Silica in groundwater is readily derived from volcanic ash that can be deposited along with the other sediments that buried the ancient trees.

A self-described “rock nerd,” **Allyson Mathis** is a geologist, informal geoscience educator and science writer living in Moab. A native of South Florida, where there are no dinosaur fossils or petrified forests, Allyson loves Moab's fossil record.



To learn more about Moab's geology, visit the *Geology Happenings* archive online at <https://www.moabhappenings.com/Geology.htm>.

Near Moab, petrified wood can be found in several rock layers (*formations*), with the Chinle and Morrison formations being most likely to contain petrified wood. Both these units were deposited in terrestrial environments, usually by rivers in their channels and on their floodplains. Many of these floodplains were forested, or at least dotted by trees.



The Chinle Formation Petrified log in Capitol Reef National Park.

extensive deposits of petrified wood in the world, as exemplified by Petrified Forest National Park in Arizona. During Chinle Formation time (just over 200 million years ago), rivers flowed to the northwest through tropical



forests growing on marshy floodplains that were also dotted by lakes. Most of the trees growing in these forests were of now extinct species of conifers, cycads, and ginkgoes, with some conifers

reaching heights of nearly 200 feet. But the “forests” in Petrified Forest NP are not of these standing forests, but are the result of log jams of fallen trees that had been carried downstream by large rivers.

Coming across a piece of petrified wood while exploring canyon country is something worth celebrating, making any day an opportunity to appreciate fossils. It combines the joy of discovery, the appreciation of beauty, and the thrill of science. It is also a link to another time where instead of arid canyons and slickrock expanses, Utah was a land of humid forests where massive logs floated downstream in mighty rivers.

All fossils on federal public lands are protected by the *Paleontological Resources Protection Act* because they provide important insights into past life. The Bureau of Land Management allows the collection of 25 pounds of petrified wood plus one piece per person per day for personal use with a maximum of 250 pounds per year, except in national monuments and other areas where collecting is prohibited.

Virtual Craggin' Classic: A Desert Grassroots Climbing Festival

Despite the unique circumstances we face, the 2020 Craggin' Classic isn't going anywhere—except to the comfort of your couch!

After careful consideration and monitoring of the global health crisis, we have decided not to host the in-person festivals. Tie in with the AAC and CAMP USA for a special, week-long digital event series unlike any you've seen before! We've got some of the biggest names in climbing lined up including Will Gadd, Alannah Yip, Nikki Smith, Renan Ozturk, Brittany Griffith, and more! All powered by CAMP USA and supported by Adidas Outdoor, Black Diamond, Mystery Ranch, Rock & Ice, and TINCUP Mountain Whiskey.

Sure, the world may be weird, but climbing is still climbing. Join the community—you belong here!

This six-day virtual festival (October 19-25) will feature:

- Online climbing clinics with local guides and pros
- Workshops on a variety of topics from nutrition to allyship
- In-depth panel discussions
- Films, pro-athlete presentations, and morning Coffee Talk
- Games and, of course, lots of prizes
- Online auction chalk full of rad gear
- Local stewardship and trash pick-ups
- So much more!

Many free virtual things to do and view along with ways to support.

More information to come, so be sure to check back often. Go to cragginclassic.com or follow us on Instagram @CragginClassic.

