

How we relate to fossils

'Cultural Resource Values Associated with National Park Service Fossils'

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FOSSILS AND PALEONTOLOGICAL RESOURCES ARE NON-RENEWABLE evidence of past life preserved within a geologic context. Typically, fossils are considered as natural resources throughout the scientific community, by public lands managers, and defined by laws. The National Park Service has documented fossils within 288 different parks spanning at least 2 billion years of Earth's history, which preserves an extraordinary diverse record of prehistoric life.

The relationships between humans and fossils is well documented in prehistoric and historic contexts, as well as in modern society. The concept of the human dimensions of paleontological resources assesses how people relate to fossils and the values that humans associate with fossils (Santucci et al., 2017). These values include scientific, educational, recreational, aesthetic, spiritual, and commercial to mention just a few of the ways people connect with fossils, forging the human dimensions of paleontological resources.

National Park Service areas provide wonderful opportunities for the public to discover and observe fossils in a natural setting within a geologic context. Seeing fossils "in the wild" within rock strata is a very different experience compared to seeing fossils assembled into exhibits in a museum. Park rangers leading visitors on a fossil hike recognize the importance of sharing an exciting moment of fossil discovery with a thoughtful resource protection message to ensure future visitors are able to enjoy a similar experience.

In cases where fossils are collected in the field by a researcher who was issued an official permit by the park, these specimens will need to be prepared and formally cataloged into the park's museum collection. The curation of fossil specimens is an important aspect of the scientific and management accountability for these resources and reflects an important cultural resource value applied to fossil specimens. The management of museum collections is traditionally a cultural resource activity undertaken by both the National Park Service and the wider professional museum community.

The National Park Service Paleontology Program began an agency-wide inventory for paleontological resources starting in 1985, which currently documents fossils within 288 different parks. During the past 40 years, fossils have been identified in three general contexts: 1) fossils within a geologic context; 2) fossils within museum collections and exhibits; and, 3) fossils within a cultural resource context. The inventory of fossils from a cultural resource context has revealed some interesting and rare occurrences of fossils from archeological sites, within prehistoric and historic structures, associated with historic resources, some ethnographic significance, and most frequently curated into museum collections (Kenworthy and Santucci 2006).

Fossils are occasionally documented from within archeological sites in association with cultural objects preserved at the locality. Several important and interesting examples are documented in National Park Service areas. Projectile points and arrowheads produced using petrified wood have been documented in parks of the



Figure 1. Petrified wood modified into a projectile point from Petrified Forest National Park, Arizona. Photo: NPS

southwest including Petrified Forest National Park, Arizona (Figure 1). A pendant incorporating the shell of a fossil brachiopod was discovered at Mesa Verde National Park, Colorado (Figure 2). Fossil shark teeth believed to be transported from the Atlantic coast were discovered from archeological sites at Hopewell Culture National Historical Park, Ohio.

Fossils have been observed and documented within the building stones of numerous prehistoric and historic structures within National Park Service areas (Santucci et al. 2021). At Petrified Forest National Park, Arizona, the prehistoric structure referred to as Agate House is constructed with blocks of petrified wood, which is a locally abundant resource used by prehistoric indigenous people (Figure 3). At Gettysburg National Military Park, Pennsylvania,

stone slabs containing dinosaur footprints were intentionally incorporated into the capstones of a stone bridge constructed by the Civilian Conservation Corps during the 1930s. Several parks contain coastal fortifications (e.g., Castillo de San Marcos National Monument, Florida) that incorporate blocks of fossil coquina (shell beds), which has properties that enable the absorption of the impact of a cannon ball. Several of the memorials (e.g., Lincoln Memorial) within the National Mall and Memorial Parks, Washington, D.C., are constructed using the fossil-rich Indiana Limestone preserving the remains of Paleozoic marine invertebrates such as crinoids.

The National Park Service has some wonderful examples of fossils that have significant historical context or association. During the paleontological resource inventory for Colonial National Historical Park, Virginia, a reference to a fossil collected from the Atlantic shorelines near Jamestown Colony was published by a European naturalist named Martin Lister in 1687 (Figure 4). The fossil de-



Figure 2. Brachiopod fossil pendant with drilled hole on display at the Mesa Verde National Park Museum, Colorado. Photo: NPS



Figure 3. Agate House is a prehistoric structure built by ancestral Puebloan people using petrified wood at Petrified Forest National Park, Arizona. Photo: NPS

scribed and figured in this early publication was collected by seaman crossing the Atlantic who understood that the natural and cultural objects in America could be sold to collectors in Europe. Lister's 1687 article represents the earliest and first publication about a fossil from the New World and the Western Hemisphere.

Other noteworthy historical references to fossils from National Park Service areas includes fossils collected by fur traders from the "mauvais terres" in the Dakota Territory. Fossil mammals from areas now within Badlands National Park, South Dakota, were transported east and sold to the few paleontologists working in museums in the eastern United States. Pioneers traveling west along the Oregon Trail documented their discoveries of fossils near Scotts Bluff (today administered as Scotts Bluff National Monument, Nebraska) in their journals and diaries. During the American Civil War, there are accounts of Union soldiers stationed at Fort Washington (now a unit within National Capital Parks East, Maryland) who would collect fossils around the fort on their days off. Famous geologist John Wesley Powell, later to become the director for the U.S. Geological Survey, collected fossils from the trenches during the battle of Vicksburg (now within Vicksburg National Military Park, Louisiana).

A few ethnographic associations of Indigenous Americans with fossils have been encountered during the paleontological resource inventories undertaken by the National Park Service. Although these occurrences are largely undocumented, Adrienne Mayor's book titled, "Fossil Legends of the First Americans," provides an excellent reference to ethnographic association of Native Americans with fossils (Mayor 2013). The Lakota Sioux legend reference the dusty old bones scattered throughout the South Dakota badlands (Badlands National Park) as the remains of the "thunder beast." The National Park Service recognizes the potential importance of fossils to Native American tribes, and therefore, advocate for parks to consider consulting with tribes concerning their occurrence, disposition, and interpretation.

The National Park Service Paleontology Program believes and embraces the

Brianna Santucci and Vincent Santucci will present a program on fossils, especially in Colonial National Historical Park, at Ranger Rendezvous 48, 1:15 p.m., Saturday, Oct. 18, 2025.



fact that fossils should be viewed holistically and in consideration of any natural, cultural, or other values that they may possess. These diverse human dimensions and perspectives enhance the significance of fossils and should influence our management of these non-renewable resources with respect to their natural and cultural resource values. Hence no stone is left unturned in the quest to understand and document the fossil record preserved across the National Park Service.

Sources

Kenworthy, J., & Santucci, V. (2006). A preliminary inventory of National Park Service paleontological resources in cultural resource contexts, part 1: general overview. *Fossils from Federal Lands, New Mexico Museum of Natural History and Science Bulletin*, 34, 70-76.

Mayor, A. (2005). *Fossil legends of the first Americans*. Princeton University Press.

Santucci, V. L., Newman, P., & Taff, B. D. (2016). Toward a conceptual framework for assessing the human dimensions of paleontological resources. *Fossil Record*, 5, 239-248.

Santucci, B.A., Moneymaker, C. A., Lisco, J. F., & Santucci, V. L. (2021). An overview of paleontological resources preserved within prehistoric and historic structures. *Fossil Record*, 7, 347-356.



Figure 4. In 1687, English naturalist Martin Lister published on a fossil pecten specimen collected from a locality near colonial Jamestown which today is within Colonial National Historical Park, Virginia. The fossil specimen was transported across the Atlantic to England and eventually reached Lister. This publication represents the first (earliest) report and illustration of a fossil from the New World and the Western Hemisphere. Photo: NPS