National Park Service
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Denali National Park and Preserve

Painted Fossil Bison Skull: When, how, and why was it painted?

NPS Photo by Lucy Tyrrell

A fossil skull of an extinct bison shows where red ochre was applied both thickly and as distinct dots. Use of ochre may be medicinal, religious, ceremonial, or simply decorative.

The painted skull may even represent a remnant of traditional knowledge and practice involving a species that once roamed Denali.

Archeological discoveries sometimes occur by chance. During the summer of 1939, while Alaska Road Commission workers were "cutting bank" to improve the Denali Park Road at Mile 41.5, they uncovered a skull with one horn intact and one missing. Later, the skull was identified as an incomplete fossil skull of an extinct bison species.

In 2006, when archeologists were examining this skull, now part of the museum collection at Denali, one of them noticed that this serendipitous discovery was even more special because the skull was painted with red ochre. Red ochre is a mineral pigment known to represent blood and earth to many traditional societies. This pigment is found throughout the world in iron-rich deposits.

Usually archeologists only study animal remains from the perspective of traditional subsistence practices, but this bison skull allowed the possibility of examining the role of culture and perhaps ritual in the lives of Native Alaskans in what is now Denali.

To carefully examine the skull and ochre, and try to figure out the meaning of the painted skull, Kathryn Krasinski arranged for a loan of the skull to the University of Nevada, Reno, where she is a graduate student. Here follows the account of her investigation into when, how, and why the bison skull was painted.

Prehistoric bison

Bison taxonomy in North America is unsettled and controversial, but Krasinski determined that the skull was a northern specimen of *Bison antiquus occidentalis*. This species was taller and larger overall by about 15 to 25 percent than modern bison (*Bison bison*), but was slightly smaller than another common species in Alaska now extinct, *Bison priscus*. The major difference among these species, however, is the size and shape of the horn core and sheath covering, rather than body size. From tip to tip, the horns (including sheath) of *B. a. occidentalis* measured approximately 3 feet (nearly one meter).

Bison antiquus occidentalis ranged from Alaska to the Yukon, Alberta, and Manitoba in Canada, and Wisconsin, New Mexico and the Great Plains states (Nebraska, Wyoming) in the contiguous states.

Temporally, the species dates from the Pleistocene epoch known as the "Age of Glaciers" (about 80,000 years ago) and went extinct at the end of the last glacial period (about 10,000 years ago), but died out earlier in Alaska. Thus, the Denali *B. a. occidentalis* skull must be more than several thousand years old.

Use of prehistoric bison in Alaska

Bison were an important resource for Native Alaskans for most of the last 14,000 years. Bison remains uncovered at sites that date to the end of

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The skull of the extinct bison as viewed from the neck/body attachment area of the skull (note the hole for the spinal cord at the bottom and the red oche on the top and sides).

Red ochre dots were applied uniformly to the back of the skull (closeup photo).

***Bison antiquus occidentalis* was larger than modern bison.**

the last ice age have given archeologists a clue about prehistoric meals. Similar discoveries come from archeological sites across the state, spanning the entire prehistory of Alaska. Oral histories indicate that bison were important for Native Alaskans, as recently as 200 to 300 years ago, even though bison populations were dwindling. Respect for these animals likely persisted long after their extinction.

Fresh kills of mammals, such as bison, provided important food sources, but the remains (e.g., bones) were frequently used as tools. Because bone preservation in arctic environments is relatively good, fossil bones were also collected and made into tools. Early written accounts by Europeans described the use of fossil ivory and bone by Alaska Inuit for common utensils.

Skull description

The Denali bison skull is far from complete, missing one of its horn cores, most bones from the front part of the skull and all teeth. Ochre had been applied sparingly in the form of uniform dots to the back of the skull, and thickly on top of the skull. The paint even coated some highly weathered and broken surfaces.

Radiocarbon dating is a technique frequently used by archeologists to measure the time since an organism died. Krasinski arranged for the bison skull to be radiocarbon dated. The Denali skull is more than 42,000 years old! Because Alaska was not colonized by humans until approximately 14,000 years ago, the fossil must have been painted long after the animal had died.

Prehistoric ochre use

The oldest ochre use can be traced to 500,000 years ago in Tanzania, Africa. Since then, ochre was used throughout the Old World, eventually becoming commonplace among ice-age hunters. The practice was brought to the New World by the first Americans where it was dispersed around ancient habitation sites at Walker Road (north of Healy) and Swan Point (southeast of Fairbanks)—two of the oldest known sites in Alaska.

Ochre interpretations

What was the purpose of the ochre? Was it ceremonial, ritual, symbolic, religious, or decorative?

One interpretation is that ochre dots served as identity markers. Tutchone Athapaskans of the Yukon, Copper River Tlingit, Aleut, and Alutiiq peoples were known to tattoo dots on their faces and bodies in distinctive cultural styles with black and red pigment as a means of group identity. The bison dots may be analogous to these identity markers, or they may represent astronomical maps, evidence of shamanism, or even a hunter's experience.

The Denali bison may have been painted in a trance state, a common practice among shamans. Visions at the early stages of a trance are universally manifested as dots, zig-zags, and meandering lines.

Red ochre has also been painted on small spears found in high elevation ice patch settings in Wrangell-St. Elias National Park, and on bow and arrow technology from the southern Yukon. These finds suggest that hunters may have applied ochre to hunting implements to aid them in the hunt. And when hunting and tracking a wounded animal, some of the best spoor clues come from blood drops and trails. Ancient and modern artists may have used red ochre to depict these events, and recreate the hunting experience.

Who painted the skull?

The pigment was likely made with animal fat, making the paint datable by the radiocarbon technique. But the dating was not conducted because it would require removing a substantial amount of the ochre. However, its chemical signature indicates that there is no modern paint or oil-based residue mixed with the pigment. Whoever painted the skull had knowledge about red ochre and its uses.

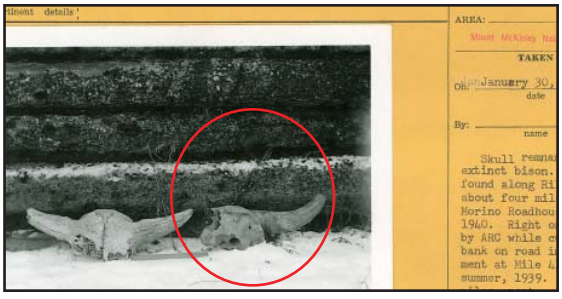
When Krasinski examined a 1942 photograph in the museum collection, she noticed that the skull in the photo matches the painted ochre skull in form, but appears to lack the ochre paint. Was the red ochre added recently? Possibly, but there are no outgoing loan records for the skull. Or, was the ochre applied prehistorically and is simply not visible in the 1942 photo due to the type of film, filters, or development process used at the time?

This bison skull highlights the importance of large animals and ochre as symbols and resources for Native Alaskans. Did these dots have had multiple meanings or were they painted for decoration? In the end, only the artist could verify why this fossil skull was painted with dots of red ochre.

View of the bison skull with the horn core extending to the right. The painted ochre is applied thickly to the top of the skull.

Photo Credit: Gary Haynes

The same bison skull appears in a 1942 museum file photo (see red circle), along side a second fossil bison skull found at Riley Creek. In this historic photograph, the red ochre paint on the skull is not visible.



For more information

Kathryn Krasinski
University of Nevada, Reno
krasinsk@unr.nevada.edu

Jane Lakeman
Museum Curator, Denali National Park and Preserve
jane_lakeman@nps.gov