



Parked in the Past

Porcupine Cave reveals ancient South Park history

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This summer, a series of seminars at the Florissant Fossil Beds cover the earliest history of South Park (see May 30 Flume), including volcanoes that erupted 56 million years ago, plants from the Ice Age and the first known humans in the area. That shared history may make one wonder about early animal life in the area.

Porcupine Cave, hidden inside a sagebrush-and-pine-covered hillside in a remote area of South Park, tells the story. It has attracted nationwide interest for the number and diversity of Ice Age animal fossils found inside.

It was a menagerie of rodents and rabbits, mammals and birds, even snakes and a cutthroat trout. They all made their way into Porcupine Cave from 1.5 million to 300,000 years ago. Their fossilized bones and scat hold clues to South Park's ancient past.

In all, the remains of 127 animal species were found in 26 locations inside the cave, including two amphibians, four reptiles, 48 birds and 73 mammals, according to the 2004 book, "Biodiversity Response to Climate Change in the

Middle Pleistocene – The Porcupine Cave Fauna from Colorado."

The book is a collection of scientists' reports from research done 1985-2000, edited and partially written by Anthony Barnosky, Ph.D.

Barnosky is currently professor of integrative biology and curator at the Museum of Paleontology, University of California, Berkeley and was involved in much of the research in Porcupine Cave, first as a vertebrate paleontologist at Pittsburgh's Carnegie Museum and later with UC-Berkeley.

In his book, Barnosky said the cave is "arguably the richest source of information in the world on Irvingtonian-age vertebrates (animals living during the middle part of the Ice Age)."

Ten years later his opinion hasn't changed. Contacted for this story, Barnosky said Porcupine Cave is still one of world's most important Ice Age sites.

In the cave researchers discovered the remains of the first known appearance of 34 animals and birds that still exist in South Park today, including common

raven, black-billed magpie, Wyoming ground squirrel, and two species of cottontail rabbit.

Rodent remains, specifically voles and wood rats (also known as pack rats), were the most common fossils found inside the cave and represent the oldest fossil finds (1.5 million years old) to the newest (300,000 years old). Because of that, scientists have been able to trace changes in the two as they evolved in the 1.2-million-year ancient history of the cave.

The cave

Porcupine Cave is the highest elevation Ice Age site in North America and existed through several glacial (frozen) and interglacial (thawing) periods. Some animals that lived in South Park during the Ice Age are not considered native in the area today. Evidence shows musk ox lived in South Park during the glacial periods and extinct species of camel, ground sloth and cheetah were here in the interglacial periods.

The ground sloth was one of the largest, if not the largest species of animal that lived in or near the cave. It could grow to a maximum of 10 feet long and weigh as much as two tons; it resembled a large bear.

One of the oldest fossils from the cave is the skull of a coyote that lived 1.5 million years ago. The severely deteriorated skull shows it was crushed by the bite of another coyote, a literal dog-eat-dog world.

Scientists believe that some animals lived and raised their young in the cave; and, indeed, remains of two cheetah kittens were found inside. Other species that may have dened in the cave are coyotes, wolves, foxes and bears. The

ground sloth was a cave dweller, as were rodents – wood rat nests and middens (pile of seeds, bones and leaves) were found in the deep recesses of the cave.

Some animals were dragged inside by the 22 species of carnivores that evidence shows lived in or around the cave; smaller species were badgers, martens, mink and weasels. Larger species included bobcats, wolverines and the extinct Edward's wolf.

Examples of prey animals, some of whose fossilized bones showed evidence of being gnawed on, are mountain goats, peccary (wild pig), large and small horses, deer, pikas, marmots, rabbits, prairie dogs and various species of squirrels.

Certain animals whose remains were found in the cave may have entered by accident. Scientists speculate that a camel may have fallen from a sinkhole and couldn't get out.

About 300,000 years ago shifting changes in the earth closed all entrances to the cave. The constant 50-degree typical cave temperature preserved the fossils and Porcupine Cave existed, unknown, until the 1860s.

Discovery

In the 1860s, gold was discovered in South Park. By the 1870s, silver was also being mined. Sometime within the two decades, miners dug with picks and shovels into a hillside colored red with iron oxide – a sign that gold and silver might be nearby, according to Barnosky.

They broke through a top layer of rock and dirt to discover the ancient cave layered with the remains of Ice Age animals.

Scientists can only guess when miners opened the cave, but the year 1890 was written in candle smoke in an area called "The Pit," named because a ladder is required for access.

On Aug. 3, 1923, Porcupine Cave was mentioned in a local newspaper – Buena Vista's Chaffee County Republican. The story told about a group of tourists, mostly from Park County, that visited the cave with area homesteader James M. Eubanks. The cave was described by the group as having amazing stalactites and stalagmites of "resplendent colors" and said it was more wonderful and far larger than the Cave of the Winds near Colorado Springs.

The following year, a report of Porcupine Cave appeared in South Carolina's Dec. 24, 1924, Spartanburg Herald. It also said the cave rivaled Cave of the Winds and that after further exploration Porcupine Cave would become a national monument.

Barnosky disagrees that the cave had magnificent decorations. He said in his book that Porcupine Cave may have had some sparse decorations in the 1920s, but if it did those had long since disappeared by the 1980s.

On July 24, 1925, the Chaffee County Republican reported a government surveyor, a Mr. Bradshaw, had worked at the cave for three weeks, accompanied by Eubanks. It reported the two had found an ivory tusk that, the story said, "must have belonged to some very large animal hundreds or thousands of years ago."

In what proved to be prophetic, the Republican reported Bradshaw believed the cave was home to some of the largest animals known to live in the area and that

the cave "is a very fertile field for the work of scientists" and that "wonderful things pertaining to life hundreds of years ago will be brought to light."

Bradshaw's opinion, as reported by the Republican was that "the world will be given new light on some forms of life that existed when this section was either the bed of an ocean or just after the Noah flood," and said the government is determined to see what kinds of animals lived in the cave in ages past.

Velvet tobacco tin

In 1939, two cowboys working for the cave's then owner were riding by the cave on the way to a ranch rodeo. On a whim, they wrote a note, placed it in a Velvet-brand pipe and cigarette tobacco tin, and threw it in the cave entrance, like a message in a bottle – cowboy style.

The note, dated June 14, 1939, from Lloyd Marshall and Elvis Conner, asked anyone who found the note to drop them a line. Included with their signatures were the towns where they lived, enough of an address for small towns in 1939.

It was found 47 years later in August 1986, during cave exploration. It had been transported by a wood rat to its midden in the far reaches of the cave; that area is now called the Velvet Room.

Spelunker Kirk Branson, who along with oil geologist and paleontologist, Don Rasmussen, found the message and searched for the two cowboys in 1986. Branson eventually found Marshall living in Oregon, after he telephoned every Marshall and Conner living in the area of the cave. Conner was not found.

In a two-part story in the Sept. 19 and Sept. 26, 1986, issues of The Flume, reporter Stacy Bowman wrote about

visiting the cave with Flume publisher Alberta Nelson and Barnosky, Branson, Rasmussen and junior spelunker Zach McGuire.

In the story Branson said Marshall was really surprised when he was told the note was found.

“At first he was skeptical but when I read his words to him he was thrilled,” said Branson.

1940s to present

A homestead claim was patented in February 1931, on the area of the cave and sold a month later to a cattle rancher. The original owner kept easement rights to the cave with option to purchase; his plans were apparently to develop it as a tourist attraction.

The easement rights ran out in 1941, and the cave was not developed. The rancher kept the land until 1962, when he passed ownership to another rancher. The second rancher’s family still owns the property.

Exploration begins

Rasmussen and his 10-year-old son Larry, rediscovered the cave in 1981, when they were exploring in the area. On that trip Larry found a fossilized horse tooth later confirmed to be from the Ice Age.

Four years later that discovery spurred a flurry of paleontology research (the study of what fossils tell us about the ecologies of the past, about evolution, and about our place, as humans, in the world).

Beginning in 1985 and continuing until 2000, researchers from several institutions, particularly Pittsburgh’s Carnegie Museum of Natural History, Denver Museum of Natural History (now

Denver Museum of Nature and Science), and University of California, Berkeley began a research project to study the important historical treasure hidden at Porcupine Cave.

Note: Porcupine Cave is privately owned; access is by permission only.

See images on next page.



renowned paleontologist Elaine Anderson. Originally from Salida, she was a research associate at the Denver Museum of Nature and Science and former scientific consultant at the Smithsonian Institution. (Photo courtesy of Larry Coats, Department of Geography, University of Utah)

Camel discovery

In 1996, a group from the Denver Museum of Natural History, now Denver Museum of Nature and Science, excavated remains of an extinct Ice Age camel. Wrapped remains are barely visible in the shadows behind the unidentified volunteer. (Photo courtesy of Larry Coats, Department of Geography, University of Utah)



Melvin's pit

Researchers Jim Mead and Blaine Schubert, both currently on the faculty of East Tennessee State University, are on the ladder headed down Melvin's Pit to the depths of Porcupine Cave during a 1996 excavation by the then Denver Museum of Natural History, now the Denver Museum of Nature and Science. An unidentified volunteer stands above Melvin's Pit. (Photo courtesy of Larry Coats, Department of Geography, University of Utah)



Prehistoric Screening

In a view looking out from the Porcupine Cave entrance, Jim Mead, current chair of geosciences at East Tennessee State University, sifts through prehistoric remains. Near Mead, in the hat, is late