

Marvel Cave Study Guide

Geology

Geologically speaking, the Ozarks is a karst region, land characterized by extensive underground caverns that develop as limestone dissolves by contact with water. Caves begin to form when rainwater seeps into soil, absorbing a small amount of carbon dioxide. Water mixed with carbon dioxide forms a weak carbonic acid solution which dissolves rock (particularly dolomite or limestone). Water flow creates and enlarges underground passages, then often surfaces at a spring. As the flow of water continues to erode deeper into the surface, the openings left behind become caves.

The History of Marvel Cave

On Roark Mountain, the Silver Dollar City theme park was literally built around the entrance to Marvel Cave, upon the foundations of a genuine 1880's mining town called Marmaros (the Greek word for marble). Marvel Cave has been designated a Registered Natural Landmark by the U.S. Department of the Interior – National Park Service because it possesses exceptional value in illustrating the natural history of the United States. The cave has been cited for its outstanding effort in conservation attempts to preserve its rare and endangered colony of gray bats.

Ron Martin, a teacher and native of the Ozarks, has served as a guide and naturalist at Marvel Cave. In his book Jewel of the Ozarks, Marvel Cave he writes, "Marvel Cave with its Cathedral Room, the largest cave entrance room in America, is undeniably the Ozarks' greatest cave. It was first discovered by the Osage Indians around 1500 A.D. Hearing strange noises coming from deep within the entrance pit, they named it the Devil's Den and never entered. In 1869, after the Ozarks became a part of the United States, the first white man entered the cave to look for valuable mineral deposits. In 1884, the Marble Cave Mining and Manufacturing Company was organized to remove any valuable deposits that could be found in the immense cave."

Explorers expected to find their riches in marble, however none was found and they settled for mining the extensive quantities of bat guano that could be used in the production of gunpowder instead. Hear these and other stories in colorful detail from your cave guide during the hour-long tour of Marvel Cave.

Cave Life

The life of Marvel Cave has adapted to a unique environment of nearly constant temperatures, high humidity, a limited food supply, perpetual darkness and intense silence broken only by dropping water or the flutter of bat wings. Since green plants cannot grow in darkness, cave life is dependent on food energy being brought in. This is mostly accomplished by animals or surface water transporting nutrients into the cave.

Cave animals are classified into three groups. Animals that never complete their entire life cycle in a cave and enter mainly for hibernation or refuge are called

trogloxenes. Bats, bears, raccoons and man are in this subdivision. Animals that normally live in the dark zones of a cave, but can live outside the cave, are called troglaphiles. These include cave crickets, some salamanders and beetles. Troglobites live permanently in the dark zone. These include blind cave fish, cave snails, and the Ozark Blind Salamander.

Marvel Cave's Ozark Blind Salamanders brought recognition from scientific circles after their discovery. The prestigious journal Scientific American published accounts of the find in 1885, while the Smithsonian Institution proclaimed it to be the most important zoological finding in North America. The Ozark Blind Cave Salamander is usually found in the Lost River Canyon of Marvel Cave, but is rarely seen by visitors. They are blind and lack pigmentation due to their dark environment. They range from 4-5 inches in length.

At one time, there were over 200,000 gray bats in Marvel Cave. Bats are not blind and do not try to fly into one's hair, as some people have believed in the past. At night and in the darkness of cave passages, bats navigate by echolocation. They emit high-pitched sounds, inaudible to humans, which echo from objects and are received by their sensitive hearing. The time required for the echo to return indicates the distance from the object to the bat. Bats are helpful to man. During spring, summer and fall months they fly out of the cave in the early evening and devour flying insects. Each night when not in hibernation, a bat will consume enough insects to equal one-half its body weight.

Cave Formations

The limestone and dolomite bedrock of the Ozarks' mountains contains the mineral calcite. Rainwater dissolves carbon dioxide found in the soil and air to form a weak acid solution called carbonic acid. As this solution moves downward, it slowly dissolved the calcite. On contact with the cave atmosphere, carbon dioxide is released from the solution, resulting in small deposits of crystallized calcite, forming a stalactite or other speleothems. Growth rates of these formations can vary greatly – averaging from 25 to 100 years to form one inch. Contact with human hands can limit or arrest the growth of speleothems.

World Record

The world's underground altitudes record was set in Marvel Cave's Cathedral Room on July 7, 1963. Don Piccard achieved the record only 4 months after he made the first successful crossing of the English Cannel in a hot air balloon. This notable achievement was commemorated in 1987 and 1988 in Marvel Cave with the flight of two hot air balloons piloted by attorney Carson Elliff and professional balloon pilot Jim Herschend. Both were Marvel Cave guides during the 1970s.

Source; Jewel of the Ozarks, Marvel Cave by Ronald L. Martin