

Coronado

National Memorial
National Park Service
U.S. Department of the Interior



CORONADO CAVE

two hours for a leisurely, round trip hike and visit to the cave. Bring water, hiking shoes, and two flashlights per person (no candles, flares or lanterns).

CORONADO CAVE is located 0.75 mile from the Visitor Center up a moderately steep trail. A permit, free of charge, must be obtained at the Visitor Center before hiking to the cave. The cave is approximately 600 feet in length, 20 feet high, and 70 feet wide with several crawl ways and passages, none of which are very extensive. Allow

The cave has been called by several names, including Montezuma's Treasure Vault and Geronimo's Cave. Legends claim that it was used by the Apaches as a hide-out when being pursued by the U.S. Army, and in the late 1800s it was not uncommon to find arrowheads in the cave.

CONSERVATION

Coronado cave is a unique, natural museum which displays the geologic, hydrologic, and biologic history of this region. It is your privilege to visit, explore, and learn from this cave.

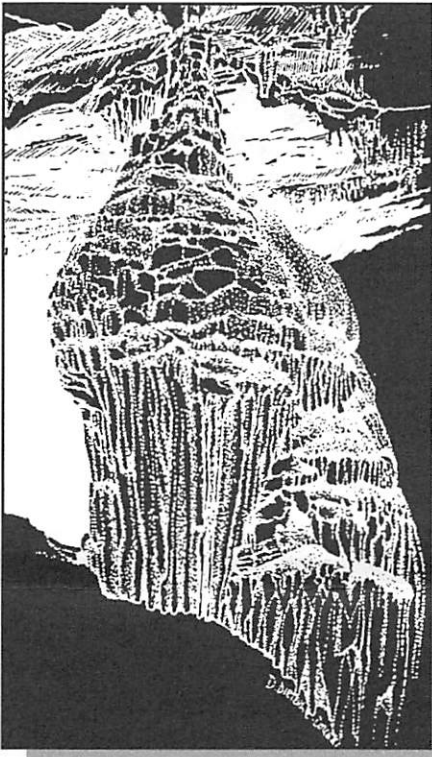
However, it is also your responsibility to help protect the cave's ecosystem and preserve this fragile environment for future generations of park visitors. In an effort to sustain this delicate, natural balance and minimize the impact of people visiting the cave, please observe the rules outlined on your permit.

GEOLOGY

The limestone that houses Coronado Cave formed about 250-300 million years ago when southern Arizona was covered by a shallow sea. Limestone is made of *calcite* (calcium carbonate grains)—the remains of ancient corals, sponges, shellfish, and other creatures that use calcium and carbon dioxide dissolved in seawater to make their shells and skeletons. When the creatures die, their remains settle to the sea floor where they are broken into sand and silt particles by waves. These deposits eventually become compacted and hardened into limestone as they are buried by younger formations.

Coronado Cave was formed by water seeping down off the mountains through cracks in the limestone. Caves form near or just above the level where rocks are filled or saturated with water. Calcite grains in the limestone are slowly dissolved by the water. Even normal rainwater becomes slightly acidic as it absorbs carbon dioxide gas from the air and percolates through soils rich in carbon dioxide released by insects, bacteria, and plant roots. The rough, pitted surface of many flat limestone slabs exposed to rainwater along the cave trail is evidence of this process. Another source of a much stronger acid is iron sulfide. Its minerals (primarily pyrite) are in the rocks surrounding Coronado Cave. When exposed to air, the iron oxidizes or *rusts* and releases sulfur, which combines with water to make sulfuric acid. This weak acid welling up from below dissolved the limestone to create the passages and caverns we see today.





FORMATIONS

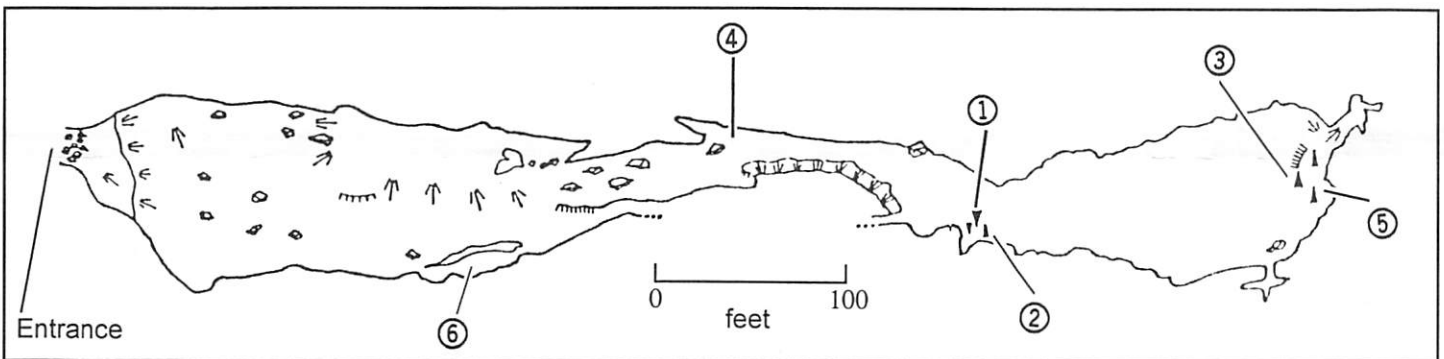
Enclosed within Coronado Cave is a beautiful range of formations, including stalactites, stalagmites, flowstones, and helictites. The numbers on the

map show the locations of various decorations. As water seeps down through the ground and drips from the roof of the cave, calcite is deposited to form *stalactites* ①. When the floor of the cave is exposed beneath these drips, mounds of calcite called *stalagmites* ② form. Sometimes they meet each other to form a *column* ③. *Helictites* ④ grow in all directions, even horizontally, and *rimstone dams* ⑤ are ridges of calcite deposits that can hold pools of water in areas of underground springs or seepage. Flowstones are limestone coatings that cover many cave surfaces. When layer upon layer of flowstone are deposited, it is referred to as *drapery* (above the cave entrance).

How fast these formations grow and their final size depends on the water supply, cave humidity,

surface soils, bacteria, and composition of the limestone. In some locations within Coronado Cave, formations are *live*, which means they are still slowly being formed by water dripping or seeping into the cave. It is important not to touch any formations because oils and acid in your hands may discolor the formations or inhibit their further development.

The cave also has numerous scalloped and tilted limestone bedding planes. These features illustrate the tectonic and hydrologic history of the region. Geologists examining these *scallops* ⑥ estimate that at one time as much as 50,000 gallons of water per minute flowed through the cave from east to west.



BIOLOGY

Coronado Cave provides a home for a diverse community of insects and small animals. Within this community are beetles, millipedes, spiders, crickets, coatimundis, ringtails, and bats. Some of these animals come into the cave occasionally for shelter or warmth, and they tend to stay near the entrance where there is more light. Others, mostly the insects, live within the cave in a specialized niche of darkness. Please be careful not to disturb any of the cave wildlife.

Insects are the most predominant form of life in the cave, having adapted to a dark and sparse environment. Their habitat is relatively stable because it is a limited environment. Since cave insects are accustomed to a meager existence, their niche in this ecosystem is secure. However, should food sources increase, insects from the outside could invade portions of the cave and replace the specialized cave insects. To help preserve the specialized niche, please don't eat in the cave and pack out all trash.

Several species of bats are occasionally observed within the cave. If you are fortunate enough to see bats, please do not disturb them. They are particularly vulnerable when hibernating, and if disturbed or awakened, may waste valuable stored energy and die. Most bats are healthy and will avoid human contact. However, they can carry rabies, and you should avoid dead bats, bats which exhibit aggressive behavior, or those crawling on the floor unable to fly. Please report such observations of bats to park rangers.

