Carlsbad Caverns National Park
New Mexico

Welcome!

Carlsbad Caverns National Park and World Heritage Site is located in the Guadalupe Mountains of southeastern New Mexico. The Guadalupe Mountains are part of the Chihuahuan Desert, one of the largest and wettest North American deserts.

The park contains over 116 known caves, and two of the most famous caves in the world, Carlsbad Cavern and Lechuguilla Cave.

Geology

The rock containing Carlsbad Cavern was formed by a reef at the edge of the Delaware Basin around 250 million years ago. Unlike most modern reefs that were formed from corals, the Capitan Reef was formed primarily from calcareous sponges and algae along with bryozoans, bivalves, marine snails, and various microorganisms. About 38 million years ago, the ancient reef rock that had been buried by younger layers of rock began to rise. During uplift, the rock folded and fractured. These fractures controlled the development of the cave and continue to control how water flows into the cave from the surface today.

Quick Numbers for Carlsbad Cavern
- Cave Length: 48 kilometers
- Cave Depth: 377.0 meters
- Years of Known Exploration: 1898 - present
- Visitors per Year: 350,000

Quick Numbers for Lechuguilla Cave
- Cave Length: 204 kilometers
- Cave Depth: 688.0 meters
- Years of Known Exploration: 1998 - present
- Visitors per Year: less than 150

Lechuguilla Cave

- 2008-2009 Surveys (in red)
- Total Surveyed Passage: 204 km (126 mi)

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How the Caves Formed

Between 4 and 6 million years ago hydrogen-sulfide-rich waters began to migrate through the limestone (1). This water mixed with rainwater moving downward through the fractures and faults in the rock (2). When the two waters mixed, the hydrogen sulfide combined with the oxygen carried by the rainwater and formed sulfuric acid (3). This acid dissolved the limestone along fractures and folds in the rock to form Carlsbad Cavern (4). As the water table lowered, aggressive dissolution at the water table formed large rooms (5). This process left behind massive gypsum deposits, clay, and silt as evidence of how the cave was formed.

Lechuguilla Cave Exploration

The park permits 6-8 survey and inventory expeditions per year. Typically, teams spend four to six days underground at one of four designated camps within the cave. Teams are required to haul all of their gear and equipment in and out of the cave, there are no gear caches. Each year, there are between five and eight kilometers of new cave explored and surveyed.

Cave Research

There is a wide variety of research being done in park caves including biology, cave climate, geology and hydrology.

Microbiologists are not only looking at what microbes are present in the caves, but are also investigating the role of microbes in the development of speleothems.

How the Caves Formed

Geologists are studying pool deposits and speleothems to understand past climates. Some of this research is providing valuable insights into cultural changes among the ancestral populations of the southwestern United States.

Researchers are looking at the type and magnitude of lithologic, tectonic, and hydrologic controls on the location, extent, and shape of cave passages. They are also exploring what geomorphic and mineralogical features within park caves can tell us about the history and mechanisms of cave development.

Protecting Carlsbad Cavern

A study completed in 1997 showed that much of the infrastructure in the park had potential impacts on Carlsbad Cavern. Runoff from the parking lots and leaks from the sewage system were contaminating the natural hydrologic system above the cave. As part of a broader project to reduce or eliminate contamination, the park is removing several structures and is reducing the amount of paved area above the cave. The Park’s main sewage line has been relocated to reduce potential leaks and spills into Carlsbad Cavern and many of the feeder lines are slated for repair or replacement.

Contact Information

For further information see http://www.nps.gov/cave