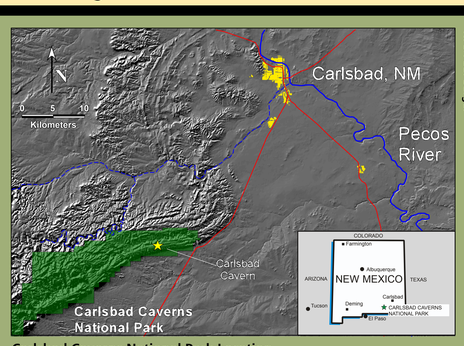
Carlsbad Caverns National Park
New Mexico

National Park Service
U.S. Department of the Interior

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.



NPS/Paul Burger

Carlsbad Caverns National Park Location

Geology

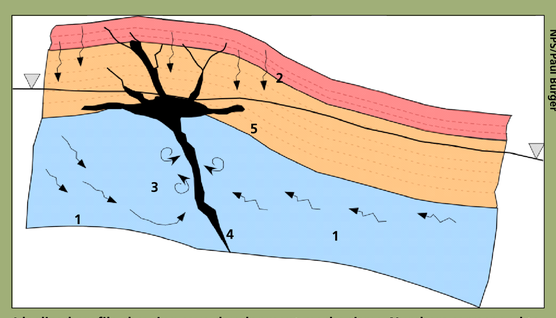
The rock containing Carlsbad Cavern was formed by a reef at the edge of the Delaware Basin around 250 million years ago. Unlike most modern reefs that were formed from corals, the Capitan Reef was formed primarily from calcareous sponges and algae along with bryozoans, bivalves, marine snails, and various 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.

Ron Blakey/ Northern Arizona University

Paleogeographic reconstruction showing the Delaware Basin relative to the southwestern United States.

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.

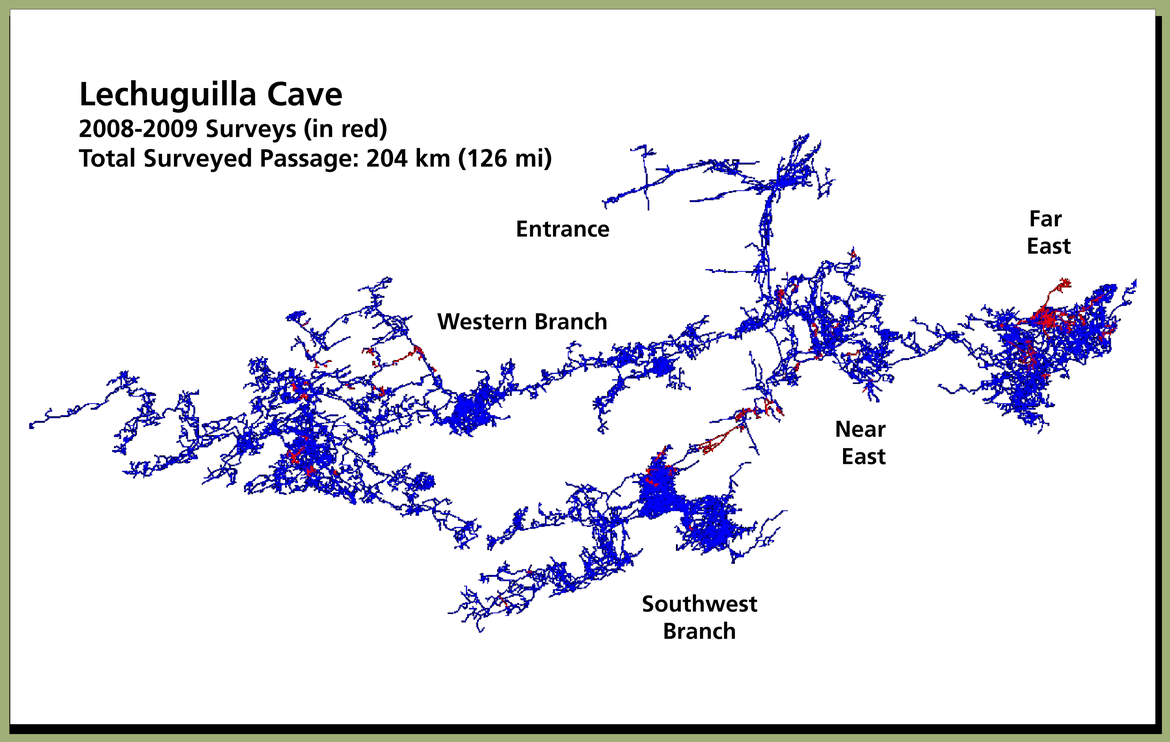


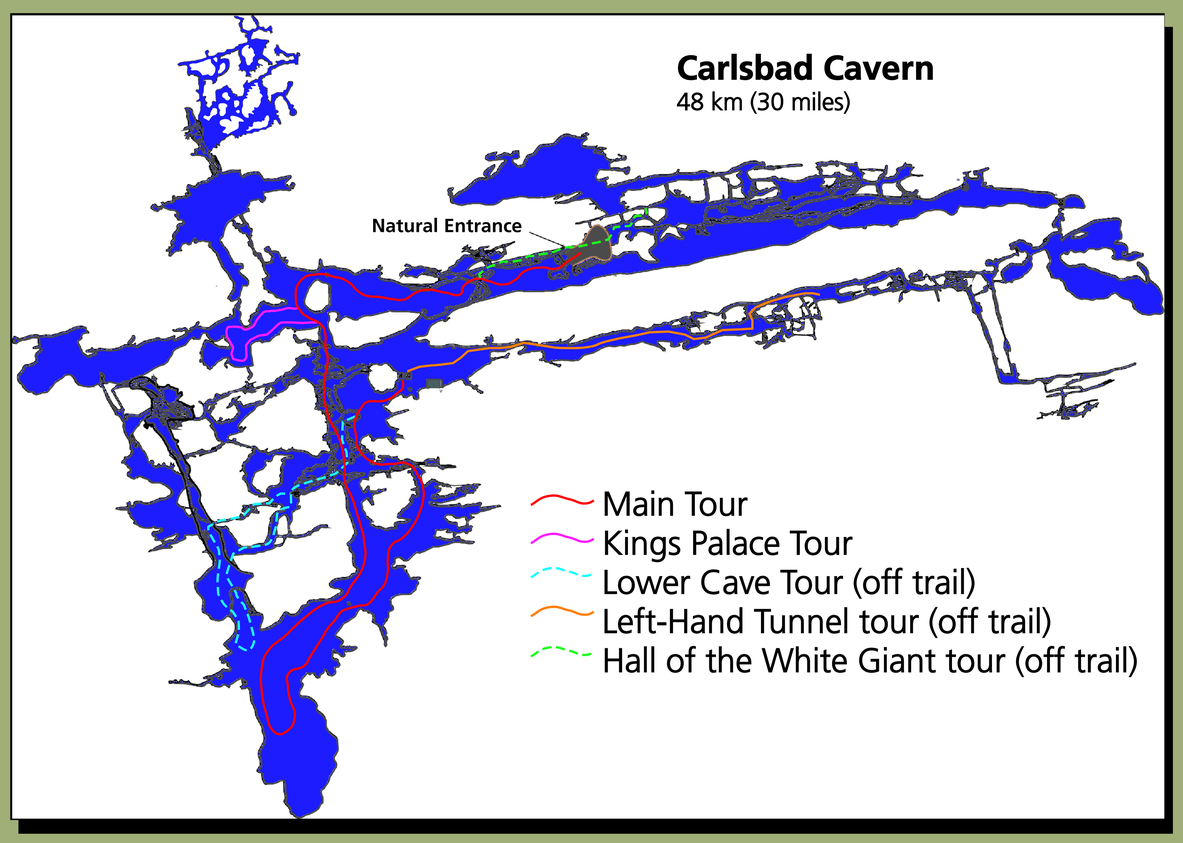
NPS/Paul Burger

Idealized profile showing cave development mechanisms. Numbers correspond to the paragraph above.

Quick Numbers for Carlsbad Cavern	
Cave Length	48 kilometers
Cave Depth	317.0 meters
Years of Known Exploration	1898 - present
Visitors per Year	350,000

Quick Numbers for Lechuguilla Cave	
Cave Length	204.0 kilometers
Cave Depth	488.0 meters
Years of Known Exploration	1903 - present
Visitors per Year	less than 100





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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.

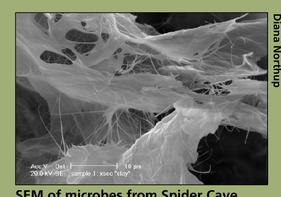

Photo by Brain Kendrick

Pushing through a tight squeeze lined with calcite spar.

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 the caves, but are also investigating the role of microbes in the development of speleothems.


Diana Northup

SEM of microbes from Spider Cave

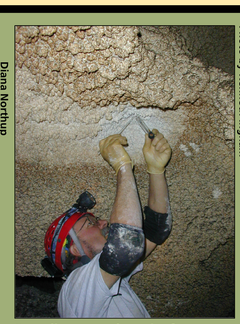


Photo by Kenneth Ingham

Sampling cave deposits for microbial analysis

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.


Photo by T. Evan Anderson

Downloading climate data from a logger in Lechuguilla Cave

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.

Poster created by Paul Burger - July, 2009

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