

Carlsbad Caverns

National Park / New Mexico

National Park Service

U.S. Department of the Interior



GIANT AND TWIN DOME

Journey Underground

Your encounter with Carlsbad Caverns National Park begins in the Chihuahuan Desert of the Guadalupe Mountains. But beyond the somewhat familiar surroundings of rugged mountains and broad plains is another world. Away from sunlight, away from the flowering cactus, away from the songs of the desert birds and the howl of the coyote lies the celebrated underground world of Carlsbad Cavern. It is an incomparable realm of gigantic subterranean chambers, fantastic cave formations, and extraordinary features. The first adventurers entering Carlsbad Cavern had no idea what to expect as they walked, crawled, and climbed down into the darkness. Today many of the wonders of Carlsbad Cavern are well known, yet the experience of exploring its chambers is every bit as exciting.

Preserving a National Treasure

Protection and preservation of Carlsbad Cavern is the mission of the National Park Service. It's your responsibility, too. Unfortunately, over the years careless people have damaged many of the cave's smaller and more delicate formations.

Experimental techniques, like those that enable rangers to match pieces of broken stalactites and painstakingly glue them back together, are sometimes successful, but in practically all cases damage is irreversible.

Cave Regulations

Please help preserve Carlsbad Cavern and other park caves by observing park regulations.

- Touching any cave formation is prohibited. Formations are easily broken, and the oil from your skin permanently discolors the rock.
- Smoking or any use of tobacco is prohibited. Eating and drinking are prohibited except in the underground rest area and lunchroom.
- Throwing coins, food, or other objects in cave pools is forbidden.
- Foreign objects ruin the natural appearance of the pools and are difficult to remove. Also, the chemical reaction among the foreign objects, the water, and the rock can leave permanent stains.
- Photography is allowed on most cavern tours. Photographers should not step off the trails or rest tripods or other camera equipment on formations.
- Strollers are prohibited because parts of the trails are steep and narrow.

Explore the Cave

Choose from three main cave tour options depending on your time, interest, and physical ability. Two tours are self-guiding; the third is ranger-guided.

Your first stop for any cave tour is the visitor center information desk, where rangers can answer your questions about tours and you may purchase tickets. The basic entry fee allows you to take either or both self-guiding tours. Rangers at the information desk can provide details about special activities and tell you about wild cave tours that may be available.

Big Room Route – The basic tour through Carlsbad Cavern is the Big Room Route, a 1.25-mile, self-guiding,

underground stroll around the perimeter of the cave's largest room. This circular 1½-hour route passes many large and famous features, like Bottomless Pit, Giant Dome, Rock of Ages, and Painted Grotto. Highly decorated and immense, the 8.2-acre Big Room is a must-see tour for all visitors to the park. Elevators in the visitor center take you to the Big Room. Relatively level, well-lit trails make this the ideal tour for visitors with limited time or walking difficulties. Parts of the Big Room are accessible to visitors in wheelchairs; a map is available at the visitor center information desk. Visitors in wheelchairs should only go into the Big Room with assistance.

Natural Entrance Route – The Natural Entrance Route is a self-guiding tour available to visitors with plenty of time and in good physical condition. This 1.25-mile tour follows the traditional explorers' route, entering the cavern through the large historic natural entrance. The Natural Entrance Route descends over 750 feet into the Earth, following steep and narrow trails through a tall, spacious trunk passage called the Main Corridor. The route culminates in the lunchroom and underground rest area, near the elevators and the Big Room Route starting point. Visitors in good health who plan to take both self-guiding tours may enjoy starting with the Natural Entrance Route. Highlights along this route include Bat Cave, Devil's Spring, Green Lake Overlook, and the Boneyard, a complex maze of dissolved, Swiss cheese-like limestone rock. Watch for Iceberg Rock, a single 200,000-ton boulder that fell from the cave ceiling thousands of years ago.

King's Palace Tour – The 1½-hour, ranger-guided King's Palace Tour goes through four highly-decorated, scenic chambers. Departing from the underground rest area, the tour



descends to the deepest portion of the cavern with paved trails 830 feet beneath the desert surface. Although not as difficult as the Natural Entrance Route, this one-mile tour does require you to descend – and later climb – an eight-story-high hill. Look for cave decorations called speleothems, like helictites, draperies, columns, and soda straws. Rangers often conduct blackout programs during this tour, briefly turning off all artificial lights to reveal the permanent inky blackness of the natural cave environment. Reservations are recommended; contact the park or visit the park website. A separate fee is charged for this tour.

All trails in the cave are paved and well-lit. Wear comfortable, closed-toe shoes with rubber soles for maximum safety

and traction. The cave temperature varies little from the annual 56°F average, making a sweater or light jacket appropriate year-round. You may want to bring a camera and a flashlight. Strollers are not allowed in any underground cave areas, but infant backpacks are permitted on the self-guiding tours.

A pre-tour restroom stop is advisable because restrooms are only available in the visitor center and at the underground rest area and lunchroom. To promote resource protection and cavern safety, a mandatory cavern orientation precedes all tours.

Rangers are available throughout the cave to protect park resources and help

you with information and questions. On both self-guiding tours, audio guides are available to provide you in-depth information about ecology, cave formation, and history. To enjoy the cave's natural quiet, please speak quietly.

The cavern is open daily except Thanksgiving, December 25, and January 1 and operates on summer and non-summer hourly schedules. For current hours contact the park or visit the park website.

Safety in the Park

To ensure that your tour of Carlsbad Cavern is comfortable, enjoyable, and safe, please follow these important rules and recommendations.

- Wear low-heeled, nonskid shoes for walking on the paved cave trails, which can be steep and slippery.
- Use handrails where available.
- Take a jacket or sweater; the cave's temperature is a constant 56°F.
- Stay on trails. Beyond the trails are steep drop-offs where you could fall and injure yourself, and you could get lost on unlighted passages. Fragile formations on the floor, walls, and ceilings can be damaged by anyone who strays from the trails.
- Do not leave pets unattended in vehicles during the summer months. Kennel services are available at the visitor center.

Other Park Activities

Visitor Center – The visitor center has information about the park's underground, mountains, and desert. Publications, topographic maps, film, a schedule of activities, and exhibits

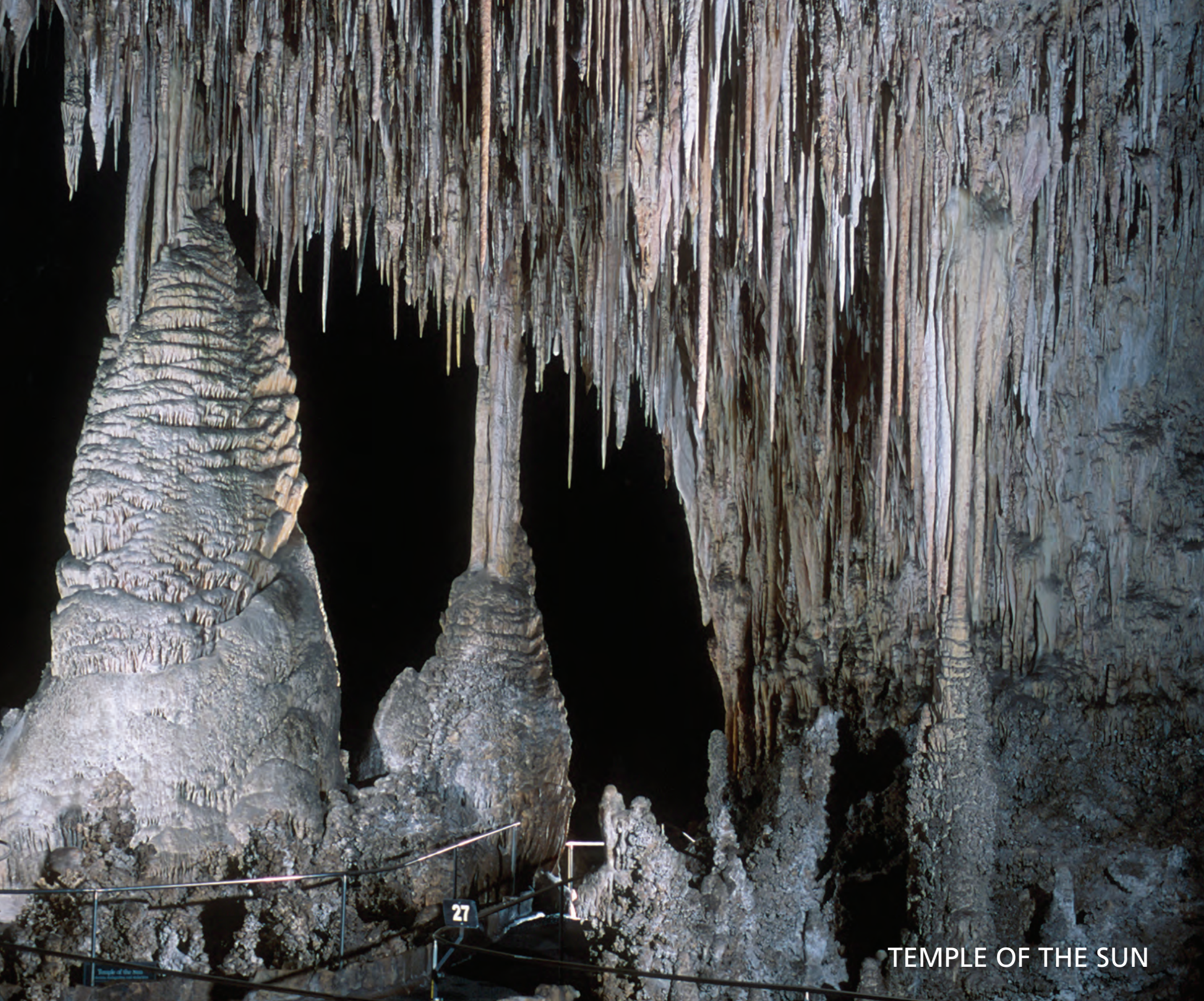
are available. Rangers can help you plan your visit. A restaurant, gift shop, bookstore, and kennel are available at the visitor center. Services are available year-round except Thanksgiving, December 25, and January 1.

Scenic Drive – The 9½-mile Walnut Canyon Desert Drive is a gravel, one-way loop through dramatic desert mountain scenery. Passenger vehicles can travel the road easily, but the narrow, twisting route is not recommended for trailers or motor homes. The visitor center has guide brochures.

Trails – The park's trail system includes a short nature trail and, for experienced hikers, over 50 miles of primitive backcountry trails. Trailheads are located along each park road. Backcountry hikers should carry an ample supply of water and a topographic map. Overnight hikers must register at the visitor center.

Camping and Picnicking – There is no developed campground in the park, but the nearby towns of Whites City and Carlsbad have several. These towns have lodging, restaurants, gasoline stations, and other services. Camping in the backcountry requires a permit, available free at the visitor center. Picnic tables are near the visitor center and in Walnut Canyon. Rattlesnake Springs has a picnic area with tables, grills, drinking water, and restrooms.

Outdoor Climate – Expect warm summers and mild winters. Average summer highs are in the 90s°F; winter highs are in the 50s and 60s°F. Thunderstorms occur in summer and pose the dangers of lightning in higher areas and of floods in low-lying areas.



Slaughter Canyon Cave

Ranger-guided tours of Slaughter Canyon Cave take you into an underground wilderness without electricity, paved walkways, or modern conveniences. In this wild cave, only tour members' head-lamps penetrate the darkness. Highlights of the 5½-hour tour are the sparkling, crystal-decorated Christmas Tree column and the Chinese Wall – a delicate, ankle-high rimstone dam. Old bat guano mining excavations can be seen. You must hike a strenuous ½-mile trail to the cave entrance. Sturdy walking shoes and water are required. Tours are given throughout the year. A fee is charged. Reservations are required. For details contact the park or check our website.

How the Cave was Created and Decorated

The geologic story of Carlsbad Cavern began 265 million years ago with the creation of a 400-mile-long, horseshoe-shaped reef. The reef stretched along the shelf edge of an inland sea that covered southeast New Mexico and west Texas. Unlike reefs today, this one was composed mostly of sponges and algae. As each generation grew atop its ancestors, pressure compressed the underlying reef into limestone. Several million years later, tectonic uplift cut off this inland sea from the vast ocean to the west, and cracks developed in the reef rock as it rose above sea level. When rainwater seeping down these cracks mixed with seawater, this mixture dissolved the reef rock and created Swiss



LAKES OF LEFT HAND TUNNEL

cheese-like interconnected voids called spongework. As the sea evaporated, the basin filled with salts, and the reef was buried.

Around 15-20 million years ago, tectonic movement started pulling the southwest region of this continent apart. A series of parallel faults created alternating valleys and mountain ranges, like the Guadalupe Mountains. The rise of these mountains exposed western sections of the buried reef rock. As the spongework above the water table drained, these cavities filled with air and rising hydrogen sulfide gas. The gas oxidized into sulfur that crystallized on the walls.

Bacteria thriving on the sulfur created sulfuric acid, which converted limestone into gypsum as rinds. These rinds peeled off the walls then fell into the water and dissolved. As new rinds replaced old ones, the spongework slowly enlarged into the huge chambers you see today. This process continued up to 2 million years ago, when tectonic movement ended.

The uplift occurred in stages. The water table, where horizontal cave development was occurring, remained at the same level as the Guadalupe Mountains uplifted. This means higher elevation caves are younger than lower



VISITORS IN ALCOVE

elevation caves. Within Carlsbad Cavern, Bat Cave is older (6 million years) than Lower Cave (4 million years).

Carlsbad Cavern's decoration of stalactites, stalagmites, and an incredible variety of other formations began slowly over 500,000 years ago, after the cavern had formed – at a time when a wetter, cooler climate prevailed. Creation of each formation depended on water that dripped down into the limestone bedrock and into the cave. Trickling downward, the water absorbed carbon dioxide gas from the air and soil, which formed a weak acid. This acidic water dissolved a little limestone and absorbed

some of the basic ingredients needed to build most cave formations – the mineral calcite. Once a drop of calcite-laden water emerged in the cave, carbon dioxide escaped into the cave air. No longer able to hold the dissolved calcite, the drop deposited its tiny mineral load as a crystal of calcite. Billions and billions of drops later, thousands of cave formations had taken shape.

Where water dripped slowly from the ceiling, soda straws and larger stalactites appeared. Water falling onto the floor created stalagmites. Sometimes a stalactite and stalagmite met and formed a column. Draperies hung

where water ran down a slanted ceiling. Flowstone formed where water flowed over the surface of a wall or floor while depositing layers of calcite.

Cave pearls, lily pads, and rimstone dams appeared where pools of water occurred in the cave. Like pearls from oysters, cave pearls developed as layers of calcite built up around a grain of sand or other tiny object. Lily pads formed on the surface of pools, while dams formed where water flowed very slowly on the floor. Decorating cave walls and even other formations was popcorn, which formed where water evaporated and left behind aragonite. Aragonite is a mineral chemically identical to calcite but with a different crystal structure. These crystals tend to be small, delicate, and needle-shaped.

Some of the more unusual formations that occur in Carlsbad Cavern are helictites. They grow seemingly without regard to gravity. Their twisting shapes are governed by crystal shapes, impurities, and the force of water under pressure.

The World of Bats

Carlsbad Cavern is a sanctuary for hundreds of thousands of Brazilian free-tailed bats. During the day they crowd together on the ceiling of Bat Cave, a passageway near the natural entrance of Carlsbad Cavern. In this darkened home they are seen only by scientific researchers. At nightfall the bats leave the cave in gigantic swarms. Silhouetted against the night sky like a dark, swift-moving cloud, the bats make their most dramatic display. Other extraordinary characteristics of bats – their natural sonar system and their ability to fly – make these creatures of darkness of great interest.

Echolocation

Like most species of bats, Brazilian free-tailed bats navigate and locate their prey by emitting ultra-high frequency sounds. Known as echolocation, this natural sonar system is similar to that used by dolphins and whales. When a bat's signals strike an object, they are reflected back and heard by the bat. The bat then takes whatever action is appropriate, whether it be zeroing in on a moth and other flying insects or swerving to avoid a tree limb.

Brazilian Free-tailed

As many as seven types of bats may roost in Carlsbad Cavern, but none is as prevalent as the Brazilian free-tailed. This dark brown to gray bat is distinguished by its long, narrow wings and a free-dangling, skinny tail. Only a part-time resident of Carlsbad Cavern, this migratory bat stays here and in other Southwest caves from early spring through October. It flies to tropical Mexico and further south for the winter.

Bat Families in the Cave

Bat Cave serves as a summer home, a daytime refuge, and, perhaps most importantly, as a maternity roost for Brazilian free-tailed bats. The bats, which are mammals, migrate from Mexico to Carlsbad Cavern each year to give birth and raise their young. Young are born in June, under the cover of darkness and away from predators or disturbances. A female usually has just one offspring each year. Each birth occurs on the ceiling as the mother hangs by her toes and thumbs. The baby (called a pup) clings to its mother or the ceiling. For the next 4-5 weeks, the pup stays on the ceiling.

During the day, mothers and pups hang there in clusters, resting and nursing – as many as 300 bats may crowd into one square foot! At night the young are left



BRAZILIAN FREE TAILED BAT FLIGHT

in the cave while the adults leave to feed. How does a mother ever find her own baby in the teeming mass of pups? She remembers her pup's location, its scent, and the sound of its cry.

In July or August each young bat takes its first flight, joining the adults on nightly forays. In late October or early November the adults and young leave for Mexico – and return next year.

Night Flight

The spectacular flight of the Brazilian free-tailed bat begins with a few bats fluttering out of the natural entrance of Carlsbad Cavern. In a matter of minutes a thick bat whirlwind spirals out of the cave up into the darkening night sky.

Out of the cave, thousands of bats wind together toward the southeast to feed in the Pecos and Black river valleys, where they gorge on moths and other night-flying insects. Using echolocation, each bat may catch and eat more than half their body weight in insects in a single night. The exodus can last from 20 minutes to 2½ hours.

With the coming of dawn, the bats begin flying back to the cave individually or in small groups. They reenter the cave almost as remarkably as they departed: each bat positions itself high above the cave entrance then folds its wings close to its body and plummets into the blackness of Carlsbad Cavern – making strange buzzing sounds as it does. One by one, the bats return to the safety of



CHRISTMAS TREE IN SLAUGHTER CANYON CAVE

Bat Cave, where they sleep until dusk the next evening.

Lure of the Unknown

Over 1,000 years ago American Indians ventured into the entrance of Carlsbad Cavern. They left no record of entering the dark zone of the cave, but they did leave mysterious drawings on cave walls near the natural entrance. In the 1800s settlers drawn by the spectacle of hundreds of thousands of bats rising out of the natural entrance in the evening discovered the cavern.

Some settlers mined the huge deposits of bat guano in the cave and sell it as a natural fertilizer. Fascinated by the cave, cowboy Jim White spent hours exploring. He was eager to reveal to

others the natural wonders of this extraordinary place, but few people believed his improbable tales of a huge underground wilderness full of unusual formations. In 1915 photographs taken by Ray V. Davis, who accompanied White on a cave trip, were displayed in the town of Carlsbad, NM. They created a sensation and eventually convinced skeptics that Carlsbad Cavern was everything it was said to be. People clamored to see the marvelous cave, and White took them on tours that began with a 170-foot descent in a bucket once used to haul bat guano from the cave.

Word of the cave spread to Washington, DC. Again, there were nonbelievers. In 1923 the U.S. Department of the Interior sent Inspector Robert Holley to see whether Carlsbad Cavern was truly

an outstanding natural scenic wonder. Originally a skeptic, Holley wrote in his final report, "I am wholly conscious of the feebleness of my efforts to convey in words the deep conflicting emotions, the feeling of fear and awe, and the desire for an inspired understanding of the Divine Creator's work which presents to the human eye such a complex aggregate of natural wonders."

Later that year Carlsbad Cavern was proclaimed a national monument. White, who continued cave explorations for most of his life, became its first chief ranger. In 1930 Congress created Carlsbad Caverns National Park. Through illustrated articles in magazines like National Geographic and by word of mouth, Carlsbad Caverns became one of the world's most celebrated cave systems and was designated a World Heritage Site in 1995. The park has expanded and now includes 46,766 acres and over 100 other caves.

Experienced cavers (underground explorers) and cave scientists are the Christopher Columbuses of today – journeying beyond what is known into the unknown. For many years cavers felt a strong breeze blowing from the floor of a small cave known as Misery Hole. In 1986 they received permission to explore and break through this level. Their discoveries opened Lechuguilla

Cave, which extends over 140 miles and holds a spectacular but fragile ecosystem. To protect this system, entry into Lechuguilla is restricted to exploration and scientific groups and will probably not be opened to the public. Within, scientists have discovered enzyme-producing microbes capable of destroying cancer cells. Scientific discoveries continue to give us clues about the complex creation of the area's caves, bats and other members of the cave community, and the effect of human activities on these fragile underground worlds.

More Information

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