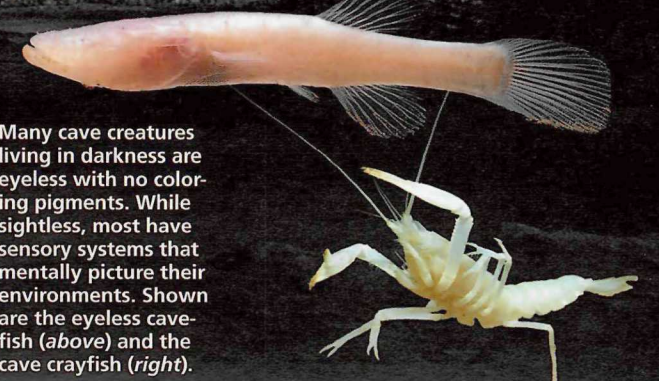




Adapting to Darkness

Many cave creatures living in darkness are eyeless with no coloring pigments. While sightless, most have sensory systems that mentally picture their environments. Shown are the eyeless cave fish (above) and the cave crayfish (right).



PHOTOGRAPHS OF ROTUNDA AND CAVE CREATURES BY CHIP CLARK

Above and Below: One Ecosystem Linked by Water

Beneath the sandstone and shale ridges of Mammoth Cave National Park lies the most extensive cave system on Earth. After 4,000 years of intermittent exploration, the full extent of this water-formed labyrinth remains unknown. With over 365 miles of surveyed passageways, Mammoth Cave is over twice as long as any known cave. How long might it be? Geologists think there could be 600 miles of undiscovered passageways.

This vast cave system holds one of the world's most diverse cave ecosystems. About 130 forms of life can be found in Mammoth Cave. Most are quite small. Some use the cave only as a haven, while others are such specialized cave dwellers that they can live nowhere else. All depend on energy from the surface. Life in the cave is not separate from the rest of the park's natural communities. It is an extension of the larger biological whole, whose diversity and abundance are preserved in this place. To tour the cave and not explore the park's surface trails and waterways is to gain but half of the total picture here.

The rugged, forested hill country of Mammoth Cave National Park is sanctuary to an array of wildlife. Deer and wild turkey frequently feed near roadsides, and 80 miles of park hiking trails provide access to the diverse life of the eastern hardwood forest. The Green River further enhances the variety of scenery and habitat. Running 27 miles through the park, the Green River is one of North America's most biologically diverse rivers. This abundance has drawn humans to this region for nearly 10,000 years.

Prehistoric peoples explored 10 or more miles of Mammoth Cave 4,000 years ago. Archeological evidence shows that these early cavers collected crystals and other salts in the cave. Cave exploration ceased 2,000 years ago, not to resume until the cave was rediscovered in 1798.

Mammoth Cave played an important role at the very start of American tourism. As an attraction, the cave predates all national parks. Publicized in the War of 1812, the "mammoth" cave of Kentucky became an

attraction by 1816. With the early scenic national parks, Mammoth Cave helped define our national identity in the 1800s, when a young United States sought status among world powers. Despite industrial and military might, we lacked the ancient places and cultural antiquities that Europe offered. Wonders of nature were our great treasures. Big was beautiful: Mammoth Cave, Grand Canyon, and Giant Sequoia. These superlatives still live up to what Ralph Waldo Emerson once called "the brag" about them.

A World Heritage Site and Biosphere Reserve

Mammoth Cave was authorized as a national park in 1926 and fully established in 1941. Only 40 miles of passageway had been mapped then. As surveying techniques improved, great strides were made in describing and understanding the cave system's overwhelming extent. Several park caves were shown to be connected, and we now know the cave system extends well beyond the national park boundary. The park was named a World Heritage Site in 1981 and became the core

area of an International Biosphere Reserve in 1990. With its 53,000 surface acres and underlying cave ecosystem, Mammoth Cave National Park is an international treasure.

But national park status and international recognition do not guarantee the continued protection and integrity of the natural systems of Mammoth Cave National Park. The park is not a self-contained system. Research shows that the cave and resident ecosystems belong to regional groundwater basins in the much larger Green River basin. Groundwater originates far beyond the park boundary and the quality can be seriously degraded under high-water conditions. Air quality studies detect ozone at concentrations that can damage vegetation. To preserve these world-class cave, forest, and river ecosystems for future generations, we must work together to protect the region's air and watersheds.



A World Heritage Site



A Man and the Biosphere Reserve

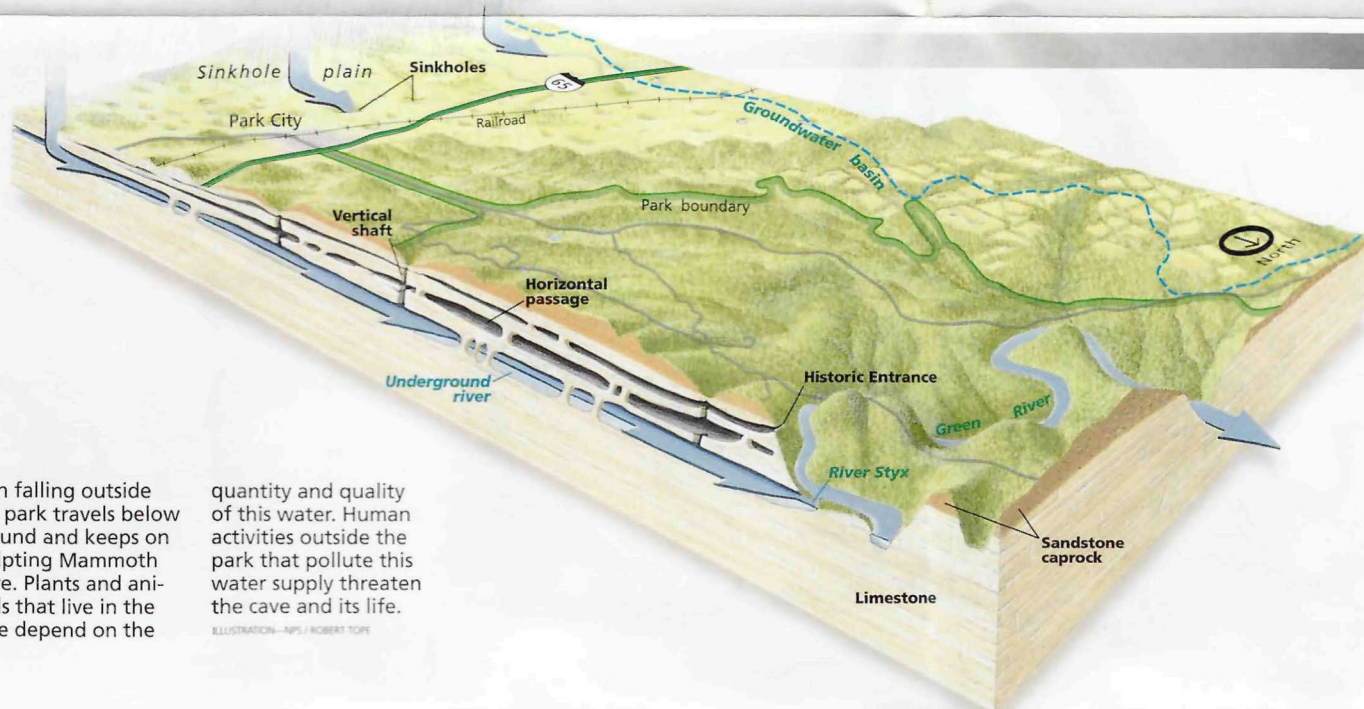
Clean Water Needed . . .

Limestone underlies the Mammoth Cave region. As rainwater infiltrates the soil, it picks up small amounts of carbon dioxide gas. Carbon dioxide reacts with the water to form a weak carbonic acid, making the groundwater mildly acidic. Like most major caves, Mammoth Cave was formed by the slow dissolution of limestone by groundwater. Animals living in the cave depend on the quantity and quality of this water.

Eroded limestone landscapes—called karst topography—are typified by the Mammoth Cave area. Sediments of a shallow sea covering this region 350 million years ago formed the limestone as highly soluble layers over a 70-million-year period.

Rain falling outside the park travels below ground and keeps on sculpting Mammoth Cave. Plants and animals that live in the cave depend on the

quantity and quality of this water. Human activities outside the park that pollute this water supply threaten the cave and its life.



. . . Caves Still Forming

Over time, as groundwater dissolves the limestone, it forms underground streams. These streams converge, as surface streams do, and create Mammoth Cave's underground rivers. Over Mammoth Cave's geologic history the Green River, the region's master stream, has deeply carved and entrenched itself in its valley. Cave streams responded by creating younger, lower routes and abandoning older and higher channels, creating a network of cave passages. At depths of up to 450 feet below the surface, cave streams are still forming passages today.

As the cave formed, many aquatic species from surface waters slowly adapted to cave habitats. Several evolved as the specialized animals now found in cave streams. These cave biological communities are part of a nutrient-poor ecosystem that needs excellent water quality to survive.

The geological character that creates Mammoth Cave also threatens the cave's ecology today. Rainwater-turned-groundwater flows readily through the cave's aquatic habitats, but so do pollutants like human waste, agricultural runoff, hazardous spills on roadways, and oil and gas drilling wastes. These are easily washed into cave streams.

Because most of the cave's groundwater originates beyond the park, the Biosphere Reserve boundary encompasses Mammoth Cave's entire watershed. Today the park and its neighbors work together through the Biosphere Reserve Program to help better protect the cave while promoting environmentally sustainable agricultural, industrial, and business practices outside the park.

Human Use of the Cave and Its Resources



Stephen Bishop was a self-educated enslaved man who became a legendary cave guide and explorer. He began guiding visitors at age 17 in 1838. He was the first person to explore many miles of the vast cave.



Amateur caver Floyd Collins drew national media attention in 1925, pinned for days by a boulder in Sand Cave. He died before rescuers could free him. The publicity played a role in Mammoth Cave being made a national park in 1926.

Over 10,000 years ago Paleo-Indians hunted animals in the Green River valley near Mammoth Cave. From 4,000 to 2,000 years ago, Late Archaic and Early Woodland Indians explored and mined minerals from Mammoth and other caves. Artifacts these earliest explorers left—including cane reed torches they used to light their way into distant parts of the cave—are preserved in drier passageways.

European American settlers came to the Green River valley in the late 1790s. Like native people before them, the newcomers found uses for Mammoth Cave. The cave served as a mine for saltpeter, key to the manufacture of gunpowder. Before the War of 1812 enslaved workers mined large quantities of this mineral.

By war's end Mammoth Cave's notoriety had grown. Around 1816 people started to visit the cave. In 1838 Stephen Bishop and Mat and Nick Bransford, enslaved persons owned and leased by the cave's owners, became renowned guides.

Bishop discovered many miles of cave. He was first to cross the previously impassable Bottomless Pit and the first to see the cave stream's natural residents, called eyeless cavefish. The Bransfords and their descendants were guides at Mammoth Cave for over 100 years.

Touring the Cave

Plan Ahead Cave tours are offered daily, except December 25. Tour schedules and visitor center hours vary from season to season. Fees are charged. Certain tours may require special clothing or equipment. Contact the park for tour descriptions and schedules, or for information on surface activities and special events.

Mammoth Cave National Park
Mammoth Cave, KY 42259-0007
www.nps.gov/maca
270-758-2180

Getting to the Park From Louisville, KY, take I-65 south to exit 53 at Cave City. From Nashville, TN, take I-65 north to exit 48 at Park City, KY.

Time Zone Mammoth Cave National Park and Nashville, TN, are in the Central Time Zone, one hour behind Louisville (Eastern Time Zone).

Reserve a Tour Before You Visit Cave tours can and do sell out. Summer days, holidays, and all weekends are busy. Make advance reservations so you can enjoy the tour of your choice. Call the park or go to www.nps.gov/maca.



Flowstone

Traveling With Children If your children are very young, consider taking a shorter orientation tour. Children under 16 must be accompanied by an adult. Some tours have other age restrictions. Strollers and child backpack carriers are prohibited in the cave. Some tours have restroom facilities, others do not. Ask for details.

Are There Things I Can't Take Into the Cave? All weapons are prohibited (firearms, knives, sharp instruments, pepper spray, mace). Camera tripods and monopods are not permitted, nor is flash photography, though you may photograph without a flash. Flashlights are welcome on all tours except lantern tours but may not be used during tour stops. Respect other people. Don't shine lights in their eyes in the dimly lit cave. Except as medically necessary, bring no food or drink other than water.

Clothing and Footwear Wear sturdy shoes or hiking boots with good soles. Some spelunking tours require treaded boots. No bare feet; sandals are not recommended. A light jacket is recommended; cave temperatures range from freezing to around 60° F. In winter, dress in layers.

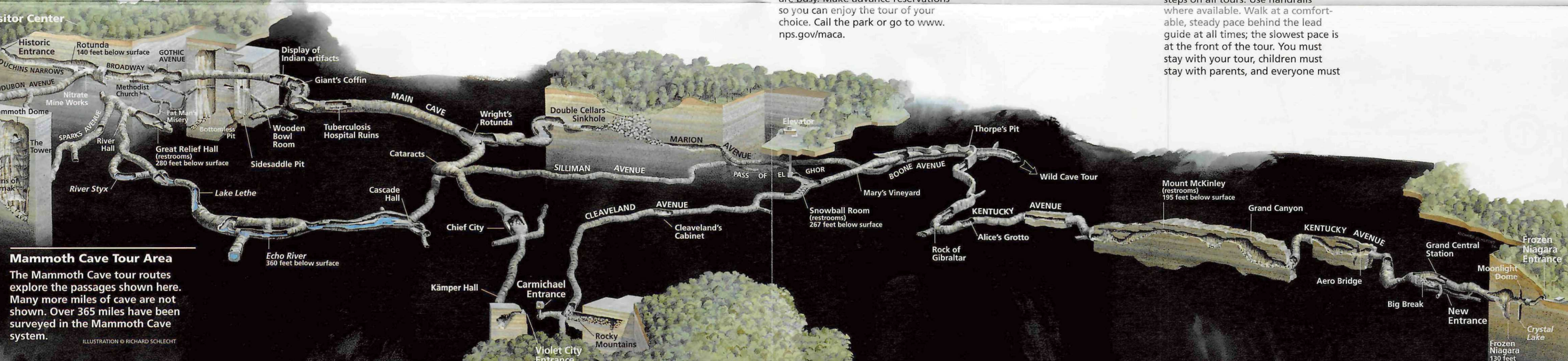
Protecting Yourself and the Cave Many cave tours are strenuous and require stooping and walking over uneven trails. You must navigate steps on all tours. Use handrails where available. Walk at a comfortable, steady pace behind the lead guide at all times; the slowest pace is at the front of the tour. You must stay with your tour, children must stay with parents, and everyone must



Cavers

stay on defined tour trails. Smoking is prohibited. Do not write on cave walls or collect cave rocks or objects as souvenirs. To guard against the spread of white-nose syndrome, a fungal disease affecting bats, all cave tour participants must walk on biosecurity mats immediately following the tour.

Accessibility We strive to make our facilities, services and programs accessible to all. For more information, call the park or check the park website.



Mammoth Cave Tour Area

The Mammoth Cave tour routes explore the passages shown here. Many more miles of cave are not shown. Over 365 miles have been surveyed in the Mammoth Cave system.

ILLUSTRATION © RICHARD SCHLECHT

