



Public Scoping Open House

Welcome!

The public scoping comment period for the cave and karst management plan/environmental assessment (plan/EA) is open through July 30, 2019. There are several ways to provide input on the plan/EA:

- **Fill out a comment card today**
- **Submit comments online:**
<http://parkplanning.nps.gov/MACA>
(preferred method)
- **Submit written comments:**
Mammoth Cave National Park
c/o Cave and Karst Management Plan
P.O. Box 7
Mammoth Cave, KY 42259





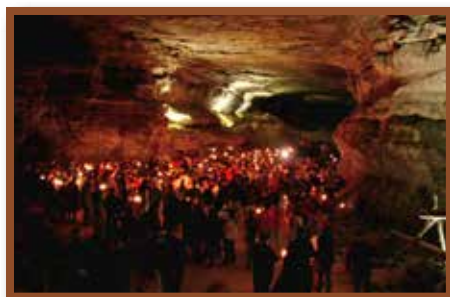
Purpose and Need

The purpose of this plan is to provide a consistent framework for managing the world-class cave and karst resources in the park and to work cooperatively with partners in the broader Mammoth Cave Area International Biosphere Reserve. The plan provides direction to protect and conserve all caves in the park (more than 450) and its entire karst groundwater system through the use of science to promote stewardship and understanding. A plan is needed to address

1. resource protection issues—particularly those related to visitation, research, and/or resulting from aboveground activities that can impact cave resources below ground—and
2. sustainable public enjoyment and education.

Karst – A landscape that is formed primarily by the dissolution of soluble rocks (typically limestone or dolomite) and is characterized by the presence of caves, sinkholes, sinking streams, springs, and subterranean rivers.

Biosphere – An area that has been designated by the United Nations Man and the Biosphere Program as a unique landscape, possessing a high diversity and/or unique population of plants, animals, and micro-organisms. Management of this area strives to balance these biological resources and their associated sustainable use.





Resource Stewardship the Plan Needs to Address

Integrity of Cave Environment – Mammoth Cave National Park faces numerous issues related to the condition of its natural systems and the overall cave environment. Air flow, temperature, relative humidity, and condensation can affect cave conditions, visitor facilities, and park infrastructure. Visitors, cave management, and construction activities can introduce or promote growth of foreign biota (e.g., growth of algae near cave lighting). Cave atmospheric conditions are also altered by visitor activities, surface activities, and changing climate. Some cave trails, particularly those with a dirt surface, are prone to dust production, which impacts natural and cultural resources in certain areas. Cave use by visitors, park staff, cooperators, and researchers, have cumulative effects on the cave's natural and cultural resources.

Cave and Karst Restoration – The park is seeking approaches for deciding how to appropriately restore caves to protect their natural and cultural resources. This approach should include guidance for determining what to restore and how to appropriately do so. Related issues include, but are not limited to, methods for removing graffiti and other signs of vandalism; removing algae and other harmful foreign biota; removing dust and lint from along tour trails; and removing outdated, non-functional, or otherwise unnecessary infrastructure and construction debris.

Water Quality, Quantity, and Flow – Activities adjacent to and within park boundaries (e.g., industry, agriculture, infrastructure development, transportation corridors) can threaten water quality, which affects sensitive karst formation and cave habitats, including threatened and endangered species. Changes to surface and groundwater quantity and flow regimes connected to dams, development, and oil and gas productions can also disrupt habitats and affect cultural resources found in the park's caves.

Administrative Guidance and Actions – The park seeks updated management guidelines, best practices, and standard operating procedures related to several management activities, including permitting (research and special park uses), maintenance, educating visitors, orienting new park staff and contractors to best management practices, gating cave passages, exploration, and discovery protocols.

Appropriate Access and Use – The park is challenged to provide adequate opportunities for visitors, researchers, and staff to experience cave resources in a sustainable, appropriate manner. With increasing visitation, it becomes more difficult to meet visitor demand. Current cave use and tour routes may not meet future visitation levels in a manner that provides a meaningful visitor experience and adequate resource protection. Challenging topics related to this issue include the following:

- Tour size, seasonality, variety, and frequency
- Providing adequate visitor facilities in the cave
- Maintaining appropriate levels of safety for the variety of cave-related activities in the park
- Protecting resources
- Park-sponsored, large-scale special events
- Cave zoning and acceptable uses in caves
- Controlling tour and non-tour visitation to park caves
- Protecting groundwater quality while providing for surface activities





No Action

Continuation of Current Management

The National Environmental Policy Act (NEPA) requires that a no-action alternative be analyzed. This alternative describes existing management and policies and establishes a baseline. Existing management activities at the park include the following:

- As possible, provide a number of tour options that seek to meet visitation levels from recent years.
- Follow current management guidance on the number of people per tour.
- Provide a range of cave opportunities that accommodate large tours as well as more immersive experiences; however, focus on large tours as needed to meet demand.
- Maintain the current level of resource management protection.

Refer to cave zoning from the general management plan to guide what routes are available for public tours, scientific study, and exploration.





Action/Preferred Alternative Summary

The Cave and Karst Management Plan would evaluate the natural and cultural resource conditions and visitor experiences in the underground cave and karst systems of Mammoth Cave National Park to help define desired future conditions and appropriate uses. This plan would include the following actions:

- Clarify park policies to protect cave and karst resources while providing an appropriate level of access.
- Develop management strategies to address protection and restoration of degraded cave and karst resources.
- Offer suitable safety for people accessing caves, while recognizing some people desire an experience that is more challenging, and some research activities carry inherent risks.
- Develop monitoring methods using sound science to ensure quality visitor experiences and protection of sensitive cave and karst resources.
- Develop visitor use management strategies that seek to balance increasing visitation and resource protection in a fiscally responsible manner.
- Include a compilation of management policies, practices, and actions related to resource protection, physical security, safety, operations, and maintenance.





Resource Protection in the Action/Preferred Alternatives

The following resource protection actions serve as examples of the types of strategies and activities that are considered in the action/preferred alternative:

- Restore/rehabilitate/modify natural or man-made cave entrances for resource protection and visitor access. Possible actions that would be considered include
 - modify artificial shafts and boreholes to manage water flow and airflow changes
 - review and potentially modify entrances, possibly using airlock systems
 - install gates at entrances where inappropriate use and impacts are occurring
 - consider opening previously closed natural entrances to restore airflow to historic conditions
 - restore entrances to more natural conditions where previous visitor use has caused impacts
- Mitigate impacts due to water infiltration through structural upgrades. Examples of types of actions would include
 - upgrade the sewer system
 - improve the drinking water system
 - install check-dam systems in vulnerable upland surface streams
 - install or improve catchment basins that may affect the cave systems
 - improve/expand parking lot filtering run-off systems
- Promote accessibility/ universal access
 - improve, expand, or develop accessible tour routes
 - develop programs and use available technology to bring the cave experience to those who cannot or do not want to go on tours
- Develop and maintain partnerships to promote responsible research, resource protection, and sustainable use at the park. This would include
 - universities
 - conservation and research organizations
 - local show caves and tourism groups
 - federal, state, and local agencies
 - neighboring land owners and communities
- Implement additional monitoring to inform park management decisions.





Visitor Use in the Action/Preferred Alternative

Under the action/preferred alternative, the park would provide a range of visitor opportunities that highlight various resources and cave areas. Management actions would include the following:

- Evaluate expanding the types of tour options available by making infrastructure improvements to certain tour routes.
- As possible, provide a variety of guided cave opportunities that range from no previous experience to advanced caving opportunities using current and previous routes.
- Present cave tour options in a manner that would make trip planning less confusing for visitors and help ensure they choose a tour that is aligned with their desired experiences and skill level.
- Provide permitted opportunities for scientific study, exploration, and special uses.
- Increase available tour routes at various times of the year (e.g., off-peak visitation periods during spring and fall shoulder seasons) and non-peak times of day.
- Offer tours that explore different portions of the cave system.
- Optimize appropriate use levels (e.g., visitor capacity) for tour routes and cave areas that provide visitor opportunities and protect resources.
- Enhance regional partnerships to improve how visitors gain information on additional cave tour opportunities in the park and in the area if their desired experience is not available at Mammoth Cave National Park.
- Revise cave zoning (from that of the 1983 general management plan) to best protect cave resources while sustaining public enjoyment and educating visitors.



Mammoth Cave National Park

Cave and Karst Management Plan / Environmental Assessment

Kentucky

July 2019





National Park Service
U.S. Department of the Interior



Proposed Updates to Cave Zones

Management zoning is a process of identifying and mapping the geographic areas of the cave and karst system where certain management programs will take place. Identifying management zones helps assure that park activities occur in the areas where they are most suited. These zones are also used to develop desired conditions and identify actions to address cave and karst management.

The current park general management plan includes a cave zoning system that is designated by the letters “A” through “F” in descending order of intensity of use and development. These zones, as outlined and defined in the general management plan, would be retained under a no-action alternative. The table below presents proposed revisions to the cave management zone descriptions and areas.

Cave Zone	Cave Zone Description	Example Cave Areas
Zone A 	<p>Cave Zone A would include public tour areas of the cave that have major development for walking (or accessible) tours and electric lights, and could include a telephone communication system. It would support concentrated use designed for visitor comfort and convenience. This zone would contain infrastructure that could accommodate events and interpretive opportunities for large numbers of visitors. It would accommodate a variety of users with varying experience and physical abilities, including large groups and areas for large gatherings. Visitors in this zone would be immersed in the sights and sounds of the cave; however, at times the sounds of other people may dominate, and visitor-caused impacts may be visible to cave resources. Opportunities for special events would be available in appropriate areas of this zone through a permit.</p>	<p>Cleaveland Avenue, Snowball Room, Kentucky Avenue, Grand Central Station, Frozen Niagara, Boone Avenue, Rafinesque Hall, Houchin's Narrows, Broadway, Main Cave, Blacksnake Avenue, Fat Man Misery, Great Relief, Sparks Avenue, Mammoth Dome, Little Bat Avenue, Audubon Avenue.</p>
Zone B 	<p>Cave Zone B would provide for a more primitive cave experience and would require handheld lights such as lanterns, flashlight, and/or headlamps. Moderate development including formalized trails may also occur in this zone in order to improve resource conditions; however, visitors may need to prepare for potentially challenging conditions. Approved educational groups and activities may occur in this zone. This zone could provide visitors with an opportunity to learn basic caving skills and necessitate the use of appropriate caving gear. Use would be managed to protect and enhance the natural function, diversity, complexity, and resiliency of the cave. Sights and sounds of the cave, along with personal interpretive opportunities, would dominate this experience. This zone could provide for a more intensively primitive cave experience; however, at times some visitor-caused impacts or developments may be experienced. Opportunities for research would be available in appropriate areas of this zone through a permit.</p>	<p>Main Cave from Star Chamber to Violet City, Great Onyx Cave, Clark Avenue, Cathedral Domes, Becky's Alley, Nickerson Avenue, Big Break, Ganter and Jessup near Wooden Bowl, El Ghor-Silliman Avenue, Woodbury Pass, Colossal Entrance to Bedquilt Route, Historic Crystal Cave Trails, Historic Proctor, Long Cave, Upper Salts Cave, Olive's Bower, Briggs Avenue, Black Chambers, Blue Spring Branch, Echo River (end of Styx Catwalk to Minnehaha), Pensacola Avenue, Sylvan Avenue, Emily's Avenue, Wondering Woods Cave, Dixon Cave, Pohl Avenue, Turner Avenue, New Discovery (main passage to end of trail development with potential extension to Big Paradise), Owl Cave, Fort's Way, Roaring River.</p>
Zone C 	<p>Cave Zone C would provide for a more intensively primitive cave experience, which is reflective of the conditions experienced by earlier cave explorers. These caves/passages are undeveloped and entered less frequently. This zone would encompass most of the Mammoth Cave system in the park as well as most of the other caves in the park. Minimal development would occur in this zone and would be mostly limited to narrow trails for traversing areas or minimal modifications for safe exploration, mapping, research, or management. The result would be a more physically demanding and challenging experience. Trail routes would not necessarily be marked. The primary users of this zone would be National Park Service resource managers and researchers with caving skills and experience. Most human modifications would not be authorized, except those needed for resource protection or safety. This zone would afford opportunities to study areas of the cave systems that have been minimally impacted by human activity. A permitting process would be used to determine appropriate uses and exploration activities in this zone and would not generally be available to the public. It would include newly discovered caves/passages that would be surveyed and assessed by highly skilled cavers and resource experts. Opportunities for research would be available in appropriate areas of this zone through a permit.</p>	<p>East Bransford Avenue, Carlos Way, River Acheron, Miller Avenue, Proctor Cave (from Proctor Crawl), Logsdon River, Bridge Avenue, Colossal River, Candlelight River, Lower Salts, Ball Trail, The Overlook, Waterfall Trail, Gravel Avenue, Lee Cave, Wilson Cave (other than the historic section), Running Branch Cave, Little Beauty Cave, Dennison Cave, Smith Valley Cave, Sand Cave, Bat Cave (other than A-survey), Luna Cave, Fort's Funnel, Silent Grove Springhouse Cave.</p>
Proposed Restriction Overlay Zone D 	<p>This overlay is necessary to designate exceptional areas that require seasonal and/or special conditions for entry. This overlay would be managed to restrict resource impacts and is designed to protect pristine caves/passages with highly sensitive resources or specific resources that require additional safeguards and would be tailored to specific areas. This overlay could also designate areas where protection is needed from dangerous conditions. As environmental conditions change in the cave/passages, the overlay areas or restrictions may be modified.</p> <p>Note: Caves/passages could move zones if conditions and/or technology changes allow.</p>	<p>Seasonal bat closures, bat restrictions all year (summer negotiable), archaeological restrictions, historic resources, delicate formations or minerals, and areas with safety concerns.</p>



Current Cave Zones Map (1983 GMP) and Proposed Cave Zones Map

