

BACKPACK THE PARKS

Expeditions in Education



Backpack the Parks!



At Expeditions in Education, we believe that learning extends far beyond the classroom walls. That's why we're thrilled to introduce our "Backpack the Parks" initiative, designed to ignite students' curiosity and love for the great outdoors while fostering a deeper understanding of our national parks.

With "Backpack the Parks," educators have the unique opportunity to curate and pack 8 engaging activities into backpacks, making it easier than ever for students to check out and explore the wonders of our national parks. From hands-on science experiments to wildlife scavenger hunts, each activity is carefully crafted to immerse students in the beauty, history, and natural wonders of these treasured landscapes.

Join us in empowering the next generation of park enthusiasts and conservationists as they embark on unforgettable learning adventures in our nation's most cherished natural spaces. With "Backpack the Parks," the journey to discovery begins with the turn of a backpack strap, and the possibilities for educational exploration are endless.

Backpack the Parks!



Instruction

Step 1: Ask for Donations of Backpacks and Clean Them Up

- Reach out to parents, local businesses, or the school community to request donations of gently used backpacks.
- Inspect the donated backpacks for any damage or excessive wear.

Step 2: Print the Activity Cards and Laminate

- Prepare activity cards that detail each of the educational activities you plan to include in the backpacks.
- Print these activity cards on durable cardstock paper.
- Laminate the activity cards to protect them from wear and tear during use.

Step 3: Put Cards on Rings

- Hole punch each laminated activity card.
- Use rings or zip ties to secure the cards together, creating a set of instructions for each activity.

Step 4: Purchase or Collect the Materials Needed for the Activities

- Create a list of materials required for each activity, as outlined in your activity plan.
- Gather all the necessary materials for each activity. This may include items such as magnifying glasses, sketchbooks, rocks, clay, flashlights, and more.

Step 5: Put Materials in Ziplock Bags

- Organize the materials for each activity into separate ziplock bags.
- Ensure that each bag contains all the necessary materials, making it easy for students to access and use them.

Step 6: Attach the National Park Tag to the Outside of the Bag

- Create or print a National Park-themed tag that identifies the backpack as part of the Backpack the Park program.
- Attach this tag securely to the outside of the ziplock bag or backpack.

Activity 1: Fossil Excavation

Materials:

- Fossil replica kit (plastic dinosaur skeletons)
- Small brushes or toothbrushes
- Plastic containers for digging

Instructions:

1. Did you know that Mammoth Cave has really old fossils from sea creatures? We're going to dig for them!
2. Each of you will get a special kit with plastic dinosaur skeletons buried inside.
3. Use the little brushes or toothbrushes to gently brush away the dirt and uncover the fossils. Be careful not to break them!
4. You can dig and collect your fossils in the plastic containers provided.
5. After we're done, we'll talk about the cool fossils we found and what they can tell us about the cave's history.

Activity 2: Cave Formation Model

Materials:

- Modeling clay (various colors)
- Plastic or glass container (as a "cave")
- Water spray bottle

Instructions:

1. Mammoth Cave was made over millions of years by water. Let's make a mini version!
2. Each of you will get some colorful clay and a container to make your own tiny cave.
3. Squish the clay to make layers and create tunnels inside the container. This is your cave!
4. Use the water spray bottle to spray a little water on your clay. This is like the rain that shaped Mammoth Cave.
5. Watch what happens to your clay over time. See how the cave forms? Just like the real thing!

Activity 3: Cave Critter Scavenger Hunt

Materials:

- Pictures of cave-dwelling creatures (bats, cave crickets, etc.)
- Magnifying glasses

Instructions for Kids:

1. Did you know caves have special creatures? We're going on a creature hunt!
2. You'll get pictures of these cave animals and magnifying glasses to help you see them up close.
3. Look around our classroom or outside to find creatures that are like the ones in the pictures.
4. When you find one, use your magnifying glass to check them out. What cool things do you notice about them?
5. Let's talk about how these creatures are awesome at living in caves!

Activity 4: Map the Cave

Materials:

- Blank paper
- Pencils, markers, or crayons
- Mammoth Cave map (available at the visitor center or online)

Instructions for Kids:

1. Time to be cave explorers and make our own cave maps!
2. You'll each get a blank piece of paper and some fun drawing stuff like pencils, markers, or crayons.
3. I'll show you a map of Mammoth Cave, and you can use it to draw your own map.
4. Put the big chambers and tunnels you see on your paper. Make them look cool with your colors!
5. After you finish, let's share our maps and talk about all the adventures we had exploring Mammoth Cave.



Mammoth Cave National Park

Activity 5: Karst Landscape Diorama

Materials:

- Shoebox or small box
- Clay or modeling materials
- Small plastic figurines (representing wildlife)
- Paints and brushes

Instructions:

1. Let's talk about the cool karst landscape around Mammoth Cave. It's all about caves, sinkholes, and the land above them!
2. Each of you gets a shoebox and some clay or modeling stuff to make things.
3. Use your materials to create a little world inside the shoebox that looks like a karst landscape. You can make caves, sinkholes, and other things you've learned about.
4. Don't forget to put tiny plastic animals in your diorama to show the wildlife that lives around Mammoth Cave. Be creative!
5. We'll share our dioramas and talk about how awesome karst landscapes are.

Activity 6: Mammoth Cave Virtual Tour

Materials:

- VR headset or smartphone with VR capability
- Mammoth Cave virtual tour app or video (accessible online)

Instructions:

1. Today, we're going on a super cool adventure without leaving our seats! It's called a virtual tour, and we'll explore Mammoth Cave.
2. You'll either get a special headset or use your smartphone with VR capability.
3. Put on the headset or follow the video, and you'll be inside Mammoth Cave, just like a real explorer!
4. While we explore, let's talk about the amazing things we see, like the caves, the history, and why Mammoth Cave is so special.

Activity 7: Geology Rock Kit

Materials:

- Assorted rock and mineral samples
- Magnifying glasses

Instructions:

1. Have you ever wondered about the rocks in Mammoth Cave? Today, we'll be geologists!
2. You'll each get different rock and mineral samples to look at.
3. Use the magnifying glasses to examine them up close. What colors and patterns do you see?
4. Let's guess what these rocks can tell us about how Mammoth Cave was formed. Our guesses will be so much fun!

Activity 8: Bat Conservation Awareness

Materials:

- Bat-themed educational materials (brochures, posters)
- Bat silhouette cutouts

Instructions:

1. Bats are super important in Mammoth Cave! We're going to learn about them.
2. You'll get some cool bat stuff like brochures and posters to look at.
3. Let's make bat silhouette cutouts to show how much we care about them.
4. While we work, we'll chat about why bats are special in caves and how we can help protect them. Bats are our friends!

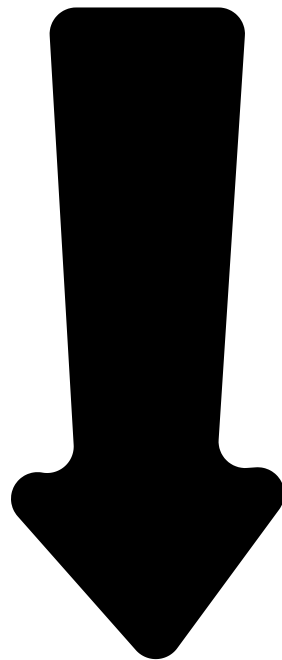
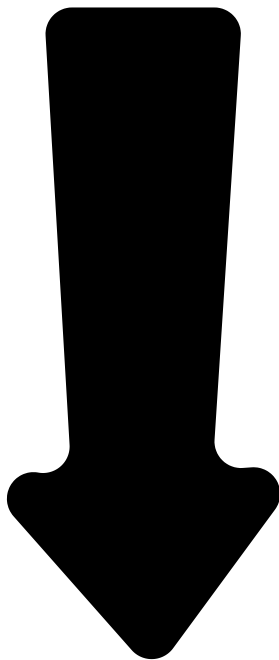


Activity Cards

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Put on rings



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BAG TAG BELOW!



**Mammoth Cave
National Park**

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#ExploreTheParksWithUs

**"Pack Your Curiosity,
Explore Nature's Beauty!"**

www.expeditionsineducation.org

Mammoth Cave Fossils

Mammoth Cave National Park is not only renowned for its magnificent underground chambers and passages but also for the incredible fossils that reveal the region's ancient history. As you journey through this subterranean wonder, keep an eye out for these remarkable remnants of the past:

1. Marine Fossils

Many fossils in Mammoth Cave date back to a time when the region was covered by a vast, shallow sea.

Discover brachiopods, crinoids, and gastropods embedded in the limestone walls, evidence of marine life that lived over 350 million years ago.

2. Shark Teeth

Be on the lookout for fossilized shark teeth, which hint at a time when these ancient predators once roamed the waters above the cave.

3. Pleistocene Fossils

Mammoth Cave also preserves fossils from more recent times. Woolly mammoth and American lion fossils remind us of the megafauna that once inhabited this region during the Pleistocene epoch.

4. Bat Fossils

Some cave fossils are more recent, such as those of bats. These fossils provide valuable insights into the history of these vital cave-dwelling creatures.

5. Scientific Research

Ongoing research and study of these fossils continue to expand our understanding of Mammoth Cave's geological and biological history.

Cave Formations

Cave formations are the breathtaking natural sculptures found in the mysterious depths of Earth's caves. Shaped over thousands or even millions of years, these unique features tell stories of geological processes and the beauty of slow, patient transformation.

1. Stalactites

- **What Are They:** Stalactites are icicle-like formations that hang from the cave ceiling.
- **How They Form:** They form as mineral-laden water drips from the ceiling, leaving behind mineral deposits with each drop. Over time, these deposits build up into elongated, tapering structures.
- **Remarkable Fact:** Stalactites can take centuries to grow just a few inches.

2. Stalagmites

- **What Are They:** Stalagmites are formations that grow upwards from the cave floor.
- **How They Form:** They form when mineral-rich water drips onto the cave floor and deposits minerals in a mound-like shape.
- **Remarkable Fact:** Over time, stalactites and stalagmites can meet and fuse together, creating impressive columns.

3. Columns

- **What Are They:** Columns are formed when a stalactite and stalagmite grow together, creating a vertical pillar.
- **How They Form:** This process can take thousands of years, with slow mineral accumulation connecting the ceiling and the floor.
- **Remarkable Fact:** Columns can be among the most stunning and massive cave formations.

4. Flowstone

- **What Is It:** Flowstone appears as smooth sheets, often resembling frozen waterfalls, on cave walls.
- **How It Forms:** Flowstone forms as water flows down the cave walls, depositing minerals and creating beautiful, flowing patterns.
- **Remarkable Fact:** These formations often appear to be frozen in time, with the appearance of flowing water.

5. Draperies or Curtains

- **What Are They:** Draperies, also called cave curtains, are thin, wavy formations hanging from cave walls.
- **How They Form:** They result from water seeping through cracks and evaporating, leaving minerals behind on the cave walls.
- **Remarkable Fact:** Draperies can vary in color and texture, creating a stunning visual display.

6. Helictites

- **What Are They:** Helictites are twisted, curving formations that seem to defy gravity.
- **How They Form:** Their exact formation mechanism is still debated, but they are believed to develop from extremely slow water flow and capillary action.
- **Remarkable Fact:** Helictites can take on bizarre and whimsical shapes.

7. Cave Pearls

- **What Are They:** Cave pearls are small, round formations resembling pearls.
- **How They Form:** They develop when flowing water deposits layers of calcite around a tiny nucleus, often a grain of sand.
- **Remarkable Fact:** Cave pearls are like nature's own jewelry.

Protecting Bats, Preserving the Ecosystem

Mammoth Cave National Park is home to not only stunning cave formations but also an essential population of bats. However, this fragile ecosystem faces a significant threat:

White-Nose Syndrome (WNS).

What is White-Nose Syndrome?

White-Nose Syndrome is a devastating fungal disease that affects hibernating bats. Named for the white fungus often seen on the noses and wings of infected bats, WNS disrupts their hibernation patterns and can lead to severe population declines.

Impact on Bats and Ecosystem:

- **Bats:** WNS can lead to bat mortality rates exceeding 90%. It causes bats to wake up more frequently during hibernation, depleting their energy reserves and leading to starvation and death.
- **Ecosystem:** Bats play a vital role in controlling insect populations, helping to maintain ecological balance. A decline in the bat population can disrupt this balance, impacting plants and animals throughout the cave ecosystem.

What Mammoth Cave National Park is Doing:

- **Monitoring:** Park biologists closely monitor bat populations and caves for signs of WNS.
- **Research:** Ongoing research helps understand the disease's effects and identify potential solutions.
- **Protection:** Some caves may be temporarily closed to visitors to minimize the risk of spreading the fungus.

How You Can Help:

- **Respect Closures:** Observe cave closures and follow guidelines to prevent the spread of WNS.
- **Clean Gear:** If you're a caver, follow decontamination procedures to reduce the risk of carrying the fungus to other caves.
- **Spread Awareness:** Educate others about WNS and its impact on bats and the ecosystem.

Virtual Cave Tours

Mammoth Cave National Park Virtual Tours:

1. National Park Service Mammoth Cave Virtual Tour: The official National Park Service website offers virtual tours and multimedia presentations that provide an immersive experience of Mammoth Cave National Park. [Mammoth Cave Virtual Tours](#)
2. Mammoth Cave Interactive Map: Explore an interactive map of Mammoth Cave, allowing you to virtually navigate the cave's passages and chambers. [Mammoth Cave Interactive Map](#)

Virtual Caves Beyond Mammoth Cave:

3. Carlsbad Caverns National Park Virtual Tours: Carlsbad Caverns in New Mexico offers virtual tours on its official website, providing stunning views of the cave's formations and chambers. [Carlsbad Caverns Virtual Tours](#)

1. Jewel Cave National Monument Virtual Tour: Explore Jewel Cave, one of the longest caves in the world, through an interactive virtual tour on the National Park Service website. [Jewel Cave Virtual Tour](#)
2. Wind Cave National Park Virtual Tours: Wind Cave National Park offers virtual tours that showcase its unique cave features, including the world's largest display of a rare cave formation known as "boxwork." [Wind Cave Virtual Tours](#)
3. Mammoth Cave YouTube Channel: The Mammoth Cave YouTube channel features a variety of videos, including virtual tours, ranger-led talks, and educational content about the cave. [Mammoth Cave YouTube Channel](#)
4. Virtual Cave: This website provides virtual tours and photographs of numerous caves around the world, allowing you to explore various cave systems from the comfort of your home. [Virtual Cave](#)
5. The Cave of Lascaux Virtual Tour: Explore the famous prehistoric cave paintings of Lascaux in France through a virtual tour offered by the French Ministry of Culture. [Lascaux Virtual Tour](#)
6. CaveSim: CaveSim offers virtual cave exploration experiences for educational purposes. While it primarily targets educators and groups, it can be a valuable resource for learning about caves. [CaveSim](#)