

Natural Entrance Tour

1. Tour usually available early May through late September.
2. Tour lasts: one hour and 15 minutes.
3. Distance walked: 1/2 mile, including above-ground walk to the cave entrance.
Generally three stops in cave.
4. Stairs encountered: Approximately 300, all but eleven down.
5. Tour size limit: 40 people
6. Tour begins at trail shelter, 150 feet north of visitor center building. Memorial Day-Labor Day. Please follow the Natural Entrance Tour signs from the bottom of the visitor center stairs.
7. At other times, meet in exhibit room at bottom of stairs.

This is a general script of the tour. The information that the ranger presents may be in a slightly different order.

The loud sound of rushing air attracted Tom and Jesse Bingham to a spot in the canyon bottom 185 yards north of the present-day Wind Cave visitor center, in the summer of 1881. The Bingham brothers found a 10-inch by 16-inch oval-shaped hole in the limestone, below some bushes. Out of the hole blasted cold wind. They had discovered Wind Cave. It is possible that American Indians had discovered the same opening prior to the Bingham, but thought it sacred. Some Native Americans thought the sound of the wind was the sound of a spirit, the same spirit that was the creator of all life, and stayed away. From where does this wind come? How did the cave form? Wind Cave has many mysteries.

After orientation at the trail shelter, the first stop on this journey is at the natural opening to the cave. Can you feel any wind coming out of the hole? If the wind is blowing into the cave, you likely will not feel it from where you stand. Imagine the curiosity people must have felt when first encountering this phenomenon. What is in that hole? From where does the wind come?

The wind is driven by changes in barometric pressure. The air pressure within the cave and outside attempt to reach equilibrium. The wind blows into the cave when the barometer rises, and out when the barometer falls. This airflow may forecast how the weather is going to change.

The revolving door, through which you enter the cave was installed in 1992, to slow the artificial airflow, and restore it to the natural opening. Can you think of why this might be important? The ranger usually checks tickets at this site and sends the group down the stairs to wait. **IF YOU HAVE ANY DOUBTS ABOUT WHERE TO STOP IN THE CAVE AND WAIT FOR THE RANGER**, please let a hearing person go in first, but stay close to the front.

On bright, sunny days, it will take time for your eyes to adjust to the cave lighting. Please walk slowly and use the handrails. There are approximately 80 steps down as soon as you enter and another 75 very shortly thereafter!

The passageways through which the group walks are long and narrow. The rock that surrounds you is limestone, originally formed in a warm shallow sea from the shells and hard parts of marine animals, like corals, snails, and brachiopods. Some geologists believe the passageways were formed by a dissolving action of acid-rich water on limestone rock, following a system of parallel fractures. The fractures may have formed with the uplifting of the surrounding mountains, the Black Hills. Some geologists believe the cave passageways were formed by the cracking and dissolving of extensive blocks of gypsum (calcium sulfate). Gypsum, a very soft and weak rock, crystallized in the same sea water at the same time the limestone accumulated. Gypsum is easily converted to limestone (calcium carbonate) by chemicals in groundwater, so only small amounts of that gypsum remains today. The origin of Wind Cave ultimately remains a mystery, since geologists, looking at the same evidence, do not always agree!

As you walk along the trail, look for boxwork, frostwork, popcorn, and snowballs. These are all cave decorations, and the names describe their appearance. Boxwork should be most visible to you.

It is approximately 200 yards from the revolving door to the first large room on this tour, the Post Office. Why do you suppose the room was so named? The group has descended about half of the 300 stairs and is about 12 stories below the level of the entrance. Where are you? Is this a mystery, too? You made a U-turn on the entranceway stairs and you are now under the hill, parallel to the trail shelter where the tour began!

The ceiling of the Post Office is profusely covered with boxwork. If you visited other caves before, did you see this type of formation? The rarity of boxwork worldwide and its abundance here make Wind Cave a world-class cave resource worthy of National Park status. How did the boxwork form? Is this yet another mystery?

The origin of boxwork has been debated for many years. Most geologists agree that the narrow blades or fins of the boxwork are calcite vein, or crack, fillings. They stand out from the ceilings or walls because the limestone that once filled the voids between them has disappeared. The details of origin of the cracks, the mechanism by which the cracks were filled with calcite, and the mechanism by which the rock between the crack fillings was worn away are all mysteries. Simply put, the cracks developed from some type of stress on the limestone. Water of one chemical make-up deposited calcite in the cracks, and water of another chemistry subsequently dissolved away the limestone from between the crack fillings, exposing the honeycomb pattern of calcite vein fillings. The unique combination of events and chemistries has been rarely repeated. This is why boxwork is so uncommon.

In this room, the ranger may turn off the lights. Be prepared for this. Be prepared, also, for another change in the cave. The Post Office room is dry. However, as you progress along the trail, you will notice water on the floor and dripping from the ceiling. From where do you suppose the water comes? Can you predict what the surface landscape is like above both the wet and dry portions of the cave?

It is a walk of almost 1,000 feet from the Post Office to the next stop. The stairs are spread

out now, and the trail has a slight slope. Be sure to look at the cave as you walk. There will be some high ceilings (and low ones, too!), bigger rooms opening along the passageway, excellent examples of boxwork, and drops of water falling on you, occasionally.

The Model Room is large enough to accommodate the group and is the second stop within the cave. There was a plaster of paris model of this room made in the 1930's. The model was on display in the visitor center many years ago.

The source of the dripping water should not present too much of a mystery. It does percolate in from the surface, more so in spring and early summer. The seepage is controlled by rainfall and snowmelt amounts. Generally, the cave is wet underneath stream beds and low spots on the surface above, and dry beneath hills.

The National Park Service has a genuine interest in and concern for the water in the cave. Incredible as it may seem, contamination has been detected in the water in a few places in the cave. "How did it get there and what can we do about it?", you may wonder. Contaminants have been washed in from the surface above the cave and some of the problem has been traced to our development on the surface. Park roads, park buildings, visitor center, and the park sewage system are located above known cave areas, or near enough to present a problem. Not only do these human-made features alter the natural flow of surface waters into the cave, but also may contribute unnatural chemicals to that water.

It is very difficult to know how to properly manage Wind Cave. How can we keep it protected when 100,000 people come to see it each year? How can we protect the cave from roads, buildings, and a sewage system already in place above the cave? We have removed the old oil-laden asphalt from the parking lots and repaved them with concrete (human-made limestone!) in order to keep oil and other pollutants from entering the cave through rain water. The water now flows off the parking lot, through a series of filters so it can be spread over grass covered areas, rather than flow more directly into the cave. This work was completed in 2005. We also have lined the sewage system pipes, but reducing water usage would also help. Leakage or overflowing of our sewage system is a concern at the present time. There are scientific studies being done that will hopefully provide us with some answers.

It is a very short walk to the final stop on the journey, merely 250 feet. Stay with the group, please. The route you follow will lead you past junctions with paved and lighted trails to other parts of the cave.

The wide, flat-ceilinged Assembly Room is over 200 feet down from the entrance. You have walked down almost 22 stories!

If park rangers are concerned about water quality in the cave, you may wonder if there are additional pressures on the cave, from the presence of us. Indeed there are. The presence of people in the cave raises its temperature slightly. The electric lights we need to see the cave also raise the cave temperature, and provide energy for green plants, algae, to photosynthesize their food and grow. Normally, no green plants should grow in a dark environment. Of

course, if we touch or break cave formations, we severely affect the cave.

Perhaps this is the ultimate mystery of all, for the national parks. How do we protect national parks and their resources from the very people and for the very people who want to enjoy them? If we stayed out of Wind Cave to protect it, we would never know what fabulous treasures it possesses that are worth protecting! At best, managing a national park is a difficult balancing act for the National Park Service.

The ranger will bring everyone out of the cave by elevator at the conclusion of this tour. Please follow the ranger from the Assembly Room to the elevator landing, and remain there while the ranger ferries people out of the cave. The elevator can accommodate 10 people at a time. If there are more than 10 people in the group, you may have to wait your turn to go up. There are restrooms at the surface, immediately outside the elevators.

You will exit from the cave into a building which is 225 yards from the visitor center. Follow the signs outside the building to return the visitor center.

Have a safe journey.