

In the United States, there are about 17,000 known caves. Rhode Island and Louisiana are the only states that do not have any caves. Only one hundred and twenty-five of these known caves have been opened to the public. Of the opened caves, fifteen are in national parks or monuments, thirty are in state parks, and the rest are privately owned and operated. Caves that have not been opened yet to the public should not be explored, except by experts.

Neff Canyon in Utah is the deepest cave in the United States with a depth of 1,189 feet below the cave entrance. Carlsbad Caverns in New Mexico is the second deepest with a depth of 1,022 feet below the cave entrance. Carlsbad Caverns also has the largest cave room that has an area of fourteen acres. Carlsbad Caverns is now a dead cave, which means that it is no longer forming, there is not any running water, and the plants are not living. Even though it is a dead cave, it still has a lot of color inside the cave. In 1974, more than 670,000 people visited Carlsbad Caverns.

Caves seem to be a natural wonder to many visitors. Caves have natural openings in the ground that lead deep into the body of the cave. These openings are called sinkholes, which are funnel-shaped structures that are the entrances to the caves. Caves remain at a constant temperature of 60 degrees all year round. Caves range in size from single small rooms to mile long passages that interconnect with one another.

Speleology is the scientific study of caves. Speleothems are the decorative dripstone features inside a cave. Speleothems (cave formations) need rainfall to pass through the plant debris and carbonate bedrock to form.

The rate of formation of speleothems depends on the rate of water flow and how much water there is. Also, the rate of formation depends on the temperature and humidity conditions in the cave, and the amount of acidity and minerals in the water. The balance is so delicate, that even a small amount of body oil from human touch can inhibit or stop formation completely.

The two basic cave formations are stalactites and stalagmites. They are the beginnings of many other formations. Stalactites are the very first formations of speleothems, and hang downward from the ceiling. Stalactites form from the first drip of water as it falls from a ring of calcite. They may grow in a solid, tubular or “soda straw” form. The stalactites are very fragile and can grow as long as a yard or more. Stalagmites, which grow upward, are formed when the calcite water falls from a stalactite and splashes onto the cave floor. Gravity plays a big role on the way the stalagmites are shaped.

Stalactites and stalagmites tend to grow in pairs. This sometimes causes them to grow together forming columns. When drops of water drip along a slope of an inclined ceiling, it creates decorative folds that resemble a curtain or drape. Helictites, which can be twisted spiraling cylinders or needles, form when the water seeps very slowly through the ceiling of the cave.

The four main types of caves are: solution caves, lava caves, sea caves, and glacier caves. Solution caves are not only the largest; they are also the most common type of cave in the world. They form in limestone and other similar rocks due to water action, such as underground rivers. Lava caves are similar to a tube or tunnel. After the outer surface of the lava has cooled and hardened,

the molten lava drains out of the newly formed tunnel to leave a cave. Sea caves are formed by the continuous crashing of waves against weak areas of rocks that line the shores of oceans and large lakes. Glacier caves (ice caves) are formed from the melting glacial water cutting through the ice causing drainage tunnels.

A less important type of cave is an eolian cave. Eolian caves are shallow and are formed in the desert by a sandblasting of sand and other fine particles against a rock face. Sandstone caves are another type of less important caves, which form from water eroding limy sandstone in the driest of deserts.

Deposits of material, which are known as cave fill, wash into most of the caves passageways. The cave fill ranges from sand, clay, and stratified gravel. It is important to the geological history of past climates of the area, because of the materials contained in the fill.

There are many minerals found in caves. Calcite is the main mineral, which forms the major features in a cave. Some other minerals include aragonite (a calcium carbonate mineral), gypsum (calcium sulfate), selenite (a less common variety of gypsum), and sulfates of sodium and magnesium. Deep caves have been known during mining operations to have ore minerals in the decorative wall draperies. Gypsum formations can resemble very small to very large bright white flowers. They are so fragile that the slightest touch will cause them to crumble. The “crystal dining room” in Mammoth cave in Kentucky is a beautiful example of gypsum flower formation. The entire ceiling of the room is covered in these flowers. Sadly due to soot from lamps and other pollutants in the past, the flowers have turned a dingy gray.

There are many interesting elements in a cave structure. Scientists use caves as natural underground laboratories, and value them highly. It has been determined that the underground water system is directly affected by caves and other solution cavities in limestone. One of the most productive aquifers (water-bearing beds) in the United States is limestone caves.

Caves are a natural wonder that should be protected for future generations. For many years, private ownership led to vandalism and damage to caves. Visitors would write or carve their names in cave walls, deposit garbage, take a souvenir, and cause damage to the cave formations. These broken speleothems, which took thousands of years to form, may never form over again. Government purchases of these properties for National Parks have had a large impact in the preservation of caves. However, many still remain in private ownership. Much work still remains to maintain these natural wonders for future generations. Only photographs and memories should be removed from the caves, so that others can also walk in the footsteps of the earliest explorers and experience firsthand the majesty and mystery of caves.

Works Cited

Davies, W.E., and Morgan, I.M. "Geology of Caves." (4 Feb. 99): p. 1-9.

Online. Internet. 2 April 2000. Available:

<http://geology.wr.usgs.gov/docs/parks/caves/caves.html>.

Fadely, Dale. Survey of Geology Lecture. Purdue University Calumet.

.Indiana:Hammond. Spring 2000.

"Stone Waterfalls and Cave Carrots." The Story of Speleothems.

p.1-3. Online. Internet. 2 April 2000. Available:

http://www.umsl.edu/~joellaws/ozark_caving/mss/speleotm.html.