

Introduction to Caving

Caving Safely and Caving Softly



Caving Organizations

- National Speleological Society
 - Dedicated to the exploration and preservation of cave resources.
- Local Grottos
 - Most larger cities have a caving club called a “grotto”.
 - Membership is open to anyone.
 - Monthly meetings.
 - Newsletter.
 - Organized cave trips.
 - Great way to meet cavers, learn about caves and obtain cave maps.

Volunteer Cavers

- Help introduce new cavers to safe caving techniques and practices.
- Are not paid! They sacrifice their time to help. Please respect the volunteers.
- Will put themselves in danger if you get hurt or need help.
- Volunteer cavers are responsible for knowing the cave route, the safety of the participants and the protection of the cave.

What is a cave?

- A cave is a natural void under the earth's surface.
- Most caves are formed in soluble rock, usually limestone.
- A solution cave is formed when rock is dissolved by slightly acidic water.
- Terrains that show evidence of solutional caves are called "karst."
- There are also lava tube caves, sea caves, ice caves and recess caves.

Sea Cave



Ice Cave



Lava Tube Cave



Recess Cave



Limestone Cave



Limestone Cave



Solutional Cave

- Solutional caves may form anywhere with rock which is soluble, and are most prevalent in limestone.
- Cave formation in limestone occurs because limestone dissolves under the action of rainwater and groundwater charged with CO₂ (carbonic acid).
- Limestone caves are often adorned with calcium carbonate formations produced through slow precipitation, including the most common and well-known stalactites and stalagmites.
- These secondary mineral deposits in caves are called speleothems.

How Are Caves Formed?

- $H_2O + CO_2 = H_2CO_3$
 - H_2CO_3 is Carbonic Acid
- Rainwater seeps into the limestone bedrock and dissolves away the rock.
- Caves are formed by a chemical action not by erosion or mechanical action.
- Caves take millions of years to form.

Speleothems

- Water containing dissolved minerals seeps through the rock, creating formations, or speleothems, on the floors, ceilings, and walls of caves.
- Most are composed of crystals of calcite or gypsum, but they often incorporate other minerals that impart color.
- Include stalactites, stalagmites, helictites, draperies, pearls, flowstone, rimstone, and columns.
- Grow slowly, sometimes for thousands of years, and because of changes in weather or surface drainage, some are no longer growing at all.

Stalactites



Stalagmites



Gypsum Flowers



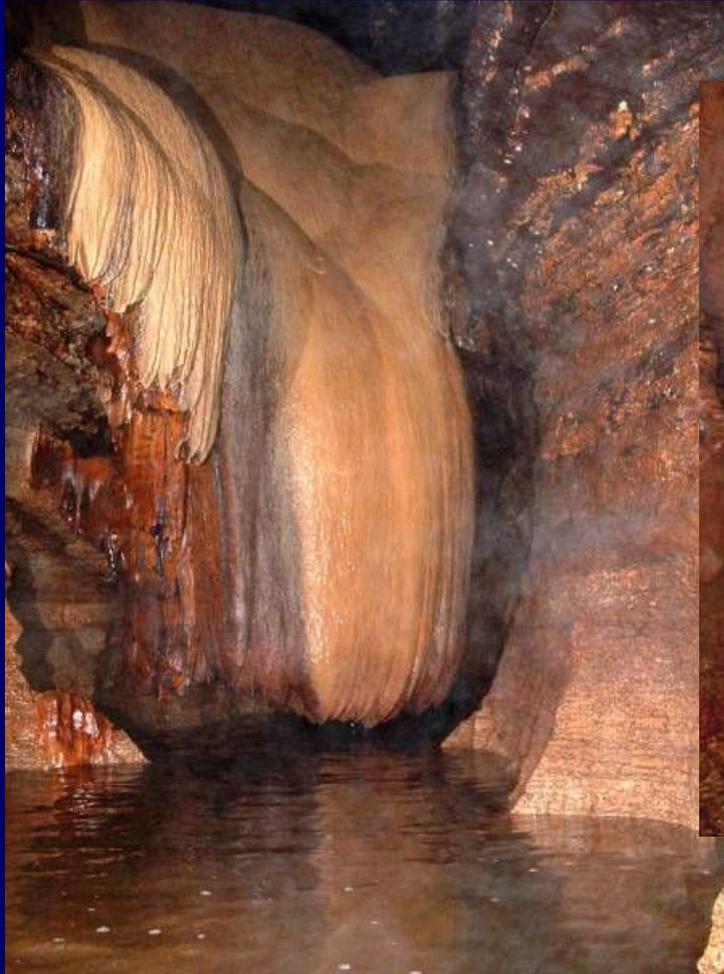
Cave Pearls



©Dave Bu



Flowstone



Formation Room



Cave Conservation

Cave Softly – Leave No Trace

- A single careless touch or malicious gesture can destroy what may have taken hundreds, or even thousands of years to form, and once damaged or destroyed, speleothems may not regenerate at all.
- Mud from a caver's glove or boot can remain forever as an ugly stain.

Cave Life

- Caves afford transitory or permanent sanctuary for a range of organisms.
- The variety of life in a cave is small and more fragile than most life on the surface.
- Avoid disturbing a cave's inhabitants, and treat them with respect.

Cave Life - Crickets



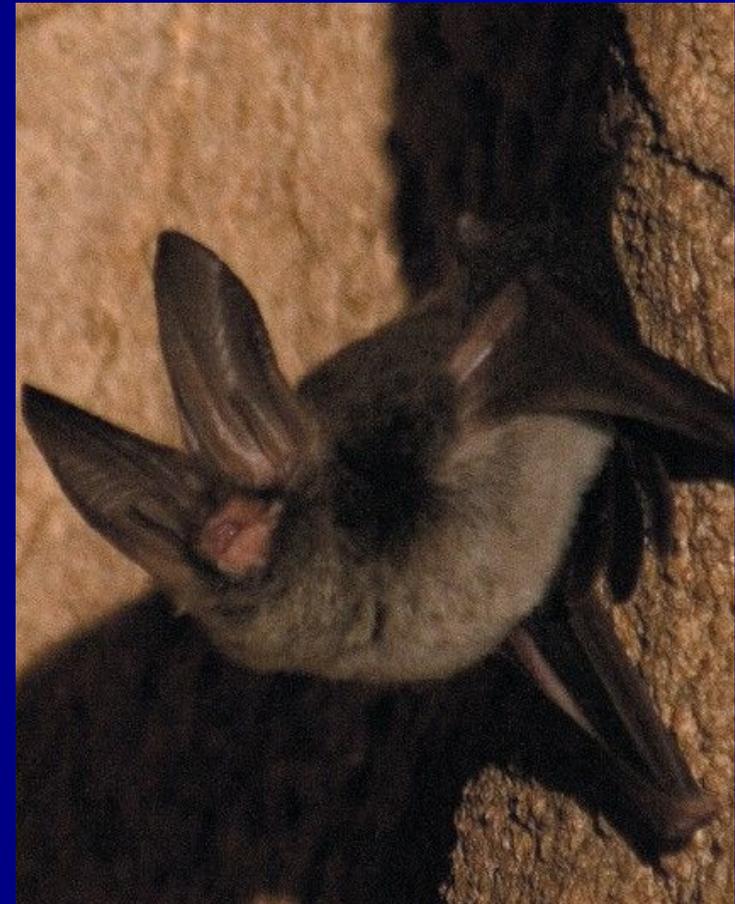
Cave Life



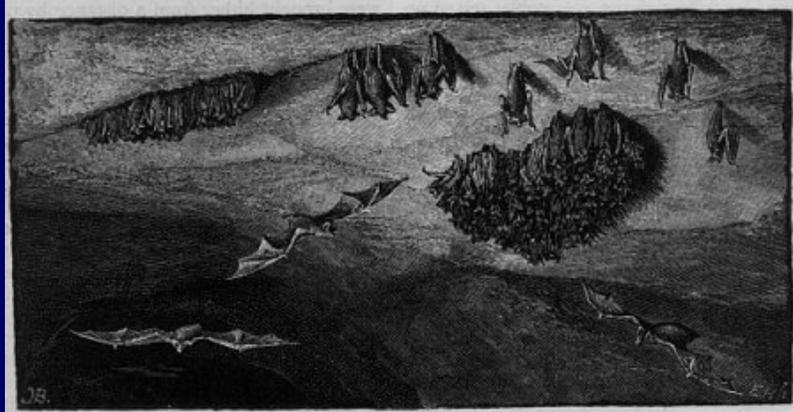
Bats

- Bats play important roles in surface ecosystems.
- Most bat species are insect eaters, and some bats eat half their body weight in insects each night.
- A single bat can eat more than 600 mosquitoes in an hour!
- Conscientious cavers avoid important bat caves in the winter to protect hibernating bats, and in the summer to protect mothers and young.

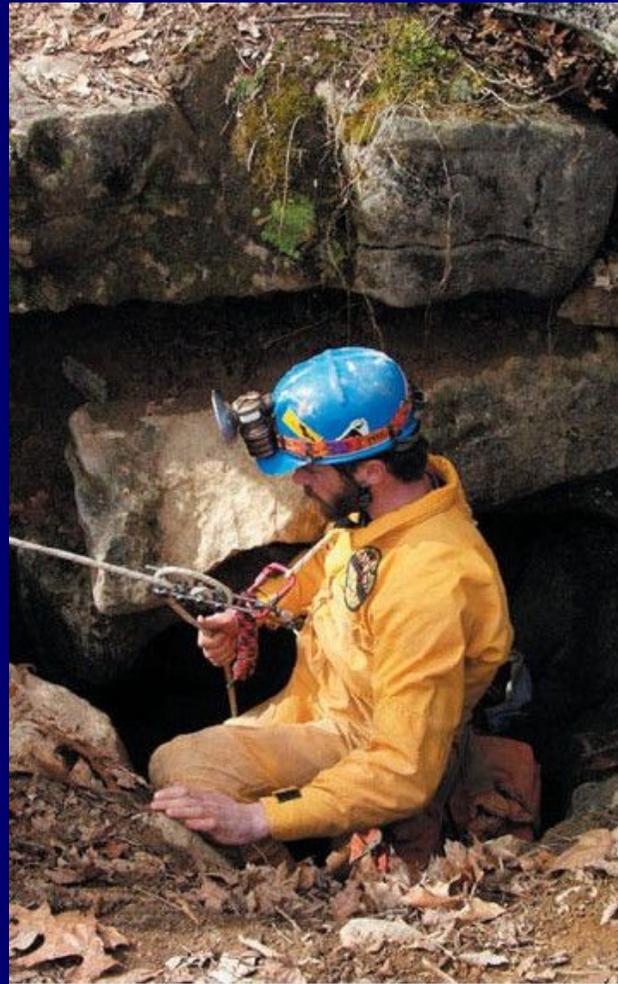
Cave Life – Bats



Cave Life – Bats



Visiting Caves



Why visit caves?

- People visit caves for many reasons, but mainly for pleasure or science.
- Non-cavers may know cavers as spelunkers, but most responsible visitors to caves prefer to be called "cavers."
- Speleology is the scientific study of the cave environment, and one who studies caves is a speleologist.

What do cavers do underground?

- Survey the caves and make maps.
- Study the geology and biology.
- Clean up caves and repair broken formations.
- The knowledge they gain helps environmental and land-use planning.

Caving Responsibly

- You and your partners are responsible for protecting yourselves, other cavers, and the caves you visit.
- We're all in this together. You don't want your actions to cause other cavers to remember you as "that caver who got killed" or "that caver who was careless and irresponsible around formations."
- Being a responsible caver involves planning a trip, moving through the cave, and returning safely, on time.

Do you really want to go caving? Tolerating misery.

- Caving is not a spectator sport, and it tends to be cold and muddy.
- Tight passages and long crawls are common.
- The dangers include falling down pits, being crushed by falling rocks or collapsing passages, drowning, and hypothermia.
- There is the possibility of getting lost and dying of hypothermia or slowly starving to death.
- Traveling to caves can be time-consuming and expensive, and the gear isn't inexpensive either.

The typical Kentucky Cave

- Constant temperature of 55-57 degrees F.
- Completely dark.
- Air is near 100% humidity.
- Wet, muddy & damp.
- Uneven, rocky, slippery floors.
- Movement includes, walking, climbing, crawling and stooping.

Essential Equipment

Each person on the trip must have the items below

- Helmet
- Lights
- Boots
- Knee Pads
- Gloves
- Pack
- Proper Clothing
- Food and Water
- Trashbag
- Spare Batteries
- Spare Bulb
- First Aid Kit

Helmet

- A climbing-grade helmet with a three point attachment system is best.
- One that meets UIAA or CE standards.
- Your helmet protects your head and offers a mount for your lights.
- For your first cave trip a construction helmet with a two point chin strap will be ok.
- Avoid football and army helmets.
- Wear a bandana under your helmet for a better fit.

Helmet



Lights, Lights, Lights

- Carry at least three independent sources of light per person.
- **Mount the primary light on the helmet**, so that you automatically have light wherever you turn your head and your hands are free to climb safely.
- The second and third light sources should be equivalent to the primary light.
- Spare parts, including batteries and bulbs, are necessary components of each source of light.
- Lights using LEDs are small and energy efficient, that their advantages outweigh those of candles and glow sticks.

Boots

- Old hiking boots with laces, lug soles and good ankle support are best.
- Avoid rubber boots and tennis shoes.
- Most types of military boots are fine.
- Your feet are likely to get wet.
- Water proofing them will not be necessary.

Boots



Knee Pads

- Knee pads protect your knees while crawling.
- The cave floor is often rough and uneven.
- Regular, athletic knee pads are fine for your first few cave trips.
- Most cavers quickly purchase durable, caving quality knee pads.

Knee Pads



Gloves

- Gloves protect hands from abrasion, sharp rocks and mud.
- They keep your hands warm.
- Gloves improve your grip and traction when climbing.
- \$1, brown jersey, garden gloves are fine for your first few cave trips.
- Most cavers prefer leather gloves.

Gloves



Cave Pack

- A pack of some type is necessary to carry your spare lights, food, water and other gear.
- A daypack or book bag type is fine for your first few cave trips.
- Most cavers have a specialized cave pack made of rugged nylon they wear on their hip or bag.
- A cave pack should close securely!

Cave Pack



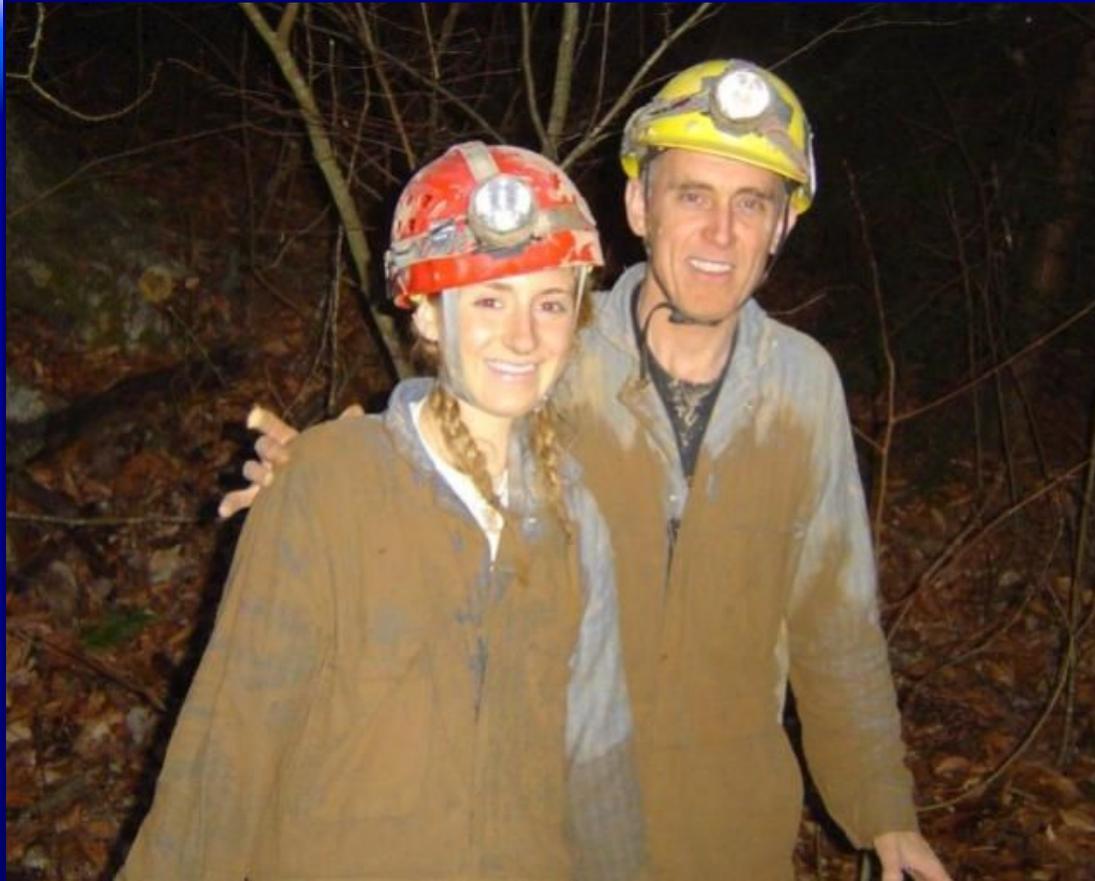
Clothing

- Dress for the expected environment in the cave.
- Layers of clothing made from synthetic fabrics are suitable for colder caves, while lighter clothing is sufficient for warm caves.
- The outer layer needs to be able to withstand the abrasive and sharp rocks of a cave.
- Some caves are so cold and wet that they require more than just layers of warm clothes; do not attempt such caves without proper training.

Outer Layer

- A pair of non-insulated (mostly nylon) work-type coveralls are great.
- Avoid insulated or winter coveralls. They will probably be too warm.
- If not coveralls then choose pants and shirt that are mostly nylon or polyester.
- Don't worry about style or color clashing.
- Wear jeans or sweat pants as a last resort.
- Some cavers purchase special caving suits.

Outer Layer



Under Layer

- Wear a pair of polypropylene long underwear (tops and bottoms).
- They will keep you warm and wick the moisture away from your skin.
- Other types of non-cotton long underwear are fine.
- Choose wool socks over cotton.
- Some cavers prefer to wear a thin liner sock under their wool socks.

Safety Tips

- Always stay together.
- Let your eyes adjust to the dark.
- Stay put if you get lost.
- Help the person in front of you.
- Help the person behind you.
- When climbing, maintain three points of contact.
- Take frequent rest breaks.

More Safety Tips

- Do not get ahead of your leader and stay in single file.
- No running or jumping.
- If you are tired, injured or scared let your leader know.
- Yell "ROCK!" if something is falling.
- Don't look up if you hear someone yelling "ROCK!".

Proper Caving

- Avoid using the cave as a bathroom.
- Turn off your light to conserve battery power when resting.
- Don't shine your light in the eyes of other cavers.
- Carry your trash and other people's trash out of the cave – especially batteries.

Proper Caving

- Ask the cave landowner for permission before entering the cave.
- Observe landowner's wishes.
- Tell someone where you are going and when you expect to be out of the cave.
- Leave No Trace
- Bring a change of clothes for after the cave.



Cave Exploring



2005 Nathan Williams

Cave Exploring



Cave Exploring



2005 Nathan Williams

Great Saltpetre Cave Preserve

- The Great Saltpetre Preserve, owned by the Rockcastle Karst Conservancy, is the home of a historic limestone cave once mined for saltpeter.
- The preserve is now managed for historical purposes by representatives of the Greater Cincinnati Grotto, the Dayton Underground Grotto and the Blue Grass Grotto.
- The grounds consist of a natural preserve of mostly pasture and woodlands in an attempt to maintain a part of Kentucky's natural beauty for generations to come.



A Kentucky non-profit organization dedicated to the education and preservation of caves and karst in the Rockcastle County, Kentucky region.

Blue Grass Grotto

- Lexington, Kentucky
- The Blue Grass Grotto is a non-profit organization with two purposes.
 - The scientific purpose of the BGG is to explore, study, and map caves and karst features in Kentucky.
 - The educational purpose of the BGG is to provide a source of information to its members and citizens on cave history, cave conservation, and safe caving practices.

The Dayton Underground Grotto



- Dayton's caving club.
- Currently 165 members.
- Annual membership is \$15.
- Meetings are the 2nd Sunday of the month in Beavercreek.
- Monthly newsletter is the "Carbide Courier".
- Cave trips to KY, IN, WV, TN, AL or GA.
- Annual event called the "Wormfest".
- Maintains a library, cave gear, survey equipment that can be borrowed.
- Members are active in exploration, surveying, conservation, rescue training, photography and vertical caving.

Greater Cincinnati Grotto



The Greater Cincinnati Grotto is one of more than 162 local chapters of the National Speleological Society (NSS) spread throughout the country. It's purpose is to advance the study, conservation, exploration and knowledge of caves

Caver's Creed

- Take nothing but pictures.
- Leave nothing but footprints.
- Kill nothing but time.