

# **PREHISTORIC KENTUCKY CAVE ART**

## **RESOURCES AND LESSONS FOR THE KENTUCKY EDUCATOR GRADES 2-12**

Available from the  
Kentucky Archaeological Survey  
(jointly administered by the Kentucky Heritage Council and the University of Kentucky,  
Department of Anthropology)  
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These three Kentucky Cave Art lessons were adapted by A. Gwynn Henderson from Lessons 18-20 in *Intrigue of the Past*, by Shelly J. Smith, Jeanne M. Moe, Kell A. Letts, and Danielle M. Paterson, 1993, published by the United States Department of the Interior, Bureau of Land Management, Utah.

*Intrigue of the Past* is the teacher curriculum guide for *Project Archaeology*, a national heritage education program that introduces students to the process of archaeology and teaches them to appreciate and protect our nation's rich cultural heritage.

For more information about Kentucky *Project Archaeology*, contact A. Gwynn Henderson, State Coordinator, Kentucky Archaeological Survey, 1020-A Export Street, Lexington, KY 40506-9854. Phone: 859/257-1944. Email: [aghend2@uky.edu](mailto:aghend2@uky.edu)

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# Background for Prehistoric Kentucky Cave Art

by

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## Introduction

Many people have heard about or have seen reproductions of European prehistoric cave “art” (visual imagery with symbolic meaning). The most famous are the Ice Age horses, bison, musk ox, and reindeer painted on cave walls at Lascaux and Altamira, deep below the mountain valleys in southern France and northern Spain. Archaeologists have studied these paintings to learn about the techniques these ancient artists used and have attempted to interpret the paintings’ cultural, social and spiritual significance to the prehistoric artists and their viewers.

Far fewer people know about the prehistoric cave art of the southeastern United States. Research into this fascinating subject began in earnest only after 1980, with the discovery of symbols drawn on mud walls within an eastern Tennessee cave. Since then, more than 30 other cave art sites have been found in this region. Archaeologists have documented five cave art sites in Kentucky: Mammoth Cave in Edmonson County; Salts and Fisher Ridge caves in Hart County; Adair Glyph Cave in Adair County; and Crumps Cave in Warren County. These Kentucky sites reflect the complete range in age, diversity of artistic techniques used, and variety of symbols represented that archaeologists have documented for the southeastern United States as a whole.

## How Did Prehistoric Peoples Use Kentucky’s Caves?

- The prehistoric use of Kentucky’s caves ranged from the purely explorative; to straightforward, practical, even exploitative; to ceremonial and ritual.

It is safe to say that native peoples entered and explored every fairly dry cave with a reasonably accessible opening during prehistory. Cane torch fragments found deep in Lee Cave, part of the Mammoth Cave system, show that prehistoric peoples entered and explored this cave as early as 2880-2495 B.C. (during the Late Archaic period).

Native peoples used conspicuous natural cave entrances for their homes. Some of these places doubled as cemeteries, the dead buried in the cave near where the family lived. Other caves were used primarily or exclusively as burial places for the dead, with both sexes and all ages placed in horizontal passages or dropped into pit caves.

Beginning around 1000 B.C., prehistoric peoples of the Early Woodland period began to systematically exploit the special resources found in caves and continued to do so for 600 years. They mined **chert** (or flint) from limestone deposits exposed in the underground passages to use in the manufacture of stone tools. They also mined minerals in the Mammoth Cave area, such as gypsum and mirabilite, that had formed on the cave walls. **Gypsum** could be used as paint,

while **mirabilite** has definite medicinal properties: when taken orally, it serves as a laxative. Its salty taste also means prehistoric peoples may have used it as a seasoning and as a food preservative. Undoubtedly, these prehistoric miners also exchanged chert and minerals with their neighbors. Men, who probably made up the majority of prehistoric miners, may have held coming-of-age ceremonies within the caves during this mining period.

Prehistoric peoples also used caves only for ritual or ceremonial use, and these are the places where archaeologists have found the bulk of Kentucky's cave art. These were often small caves or small cave passages in larger caves that required some effort and expertise to enter. People went into these places seeking to have spiritual encounters with supernatural beings. More recent oral history indicates that some native peoples considered caves to be the entrances to the underworld and inhabited by monsters. In the southeastern United States, the use of caves exclusively for ceremonies began after around A.D. 1200, in the Late Prehistoric period.

## How Did Prehistoric Artists Make Kentucky Cave Art?

- In the five Kentucky caves, as elsewhere in the southeastern United States, native artists made three different kinds of cave art: pictographs, petroglyphs, and mud glyphs.

**Pictographs** are images produced by applying mineral pigments or coloring to cave walls or large fragments of the ceiling that fall into cave passages, known as "**cave breakdown**." In the Southeast, these pigments include fine clay, ochre and especially charcoal. These are the rarest form of cave art in the Southeast. In Kentucky, archaeologists have found charcoal drawings on the cave walls in Mammoth and Salts caves, and possibly Crumps Cave. They are very fragile because prehistoric artists apparently did not use any **fixative**, such as animal fat, in their pigments.

**Petroglyphs** are engravings carved or pecked directly into the stone of the cave walls and ceilings or on fragments of ceiling breakdown. This is the most common form of cave art outside of Kentucky, but only a very few examples of petroglyphs have been documented in Kentucky caves (i.e., in Salts Cave and in Fisher Ridge Cave). This does not mean that petroglyphs themselves are rare in Kentucky. Archaeologists have documented scores of petroglyphs at Kentucky rockshelter sites, especially in the eastern Kentucky counties of Menifee, Powell, and Lee counties. Technically, **rockshelters** are not caves, because they do not extend underground far enough to contain a "dark zone."

**Mud glyphs** are images drawn in wet clay deposits found on cave ceilings, walls, or floors using fingers or sharp tools. Adair Glyph Cave and Crumps Cave in Kentucky are two of only nine known mud glyph sites in the southeastern United States. Prehistoric artists used several techniques to create mud glyphs. They **incised** or cut lines into a thin veneer of clay - using a sharp tool, such as a fragment of a freshwater mussel shell; a blunt instrument, such as a cane reed; or the artist may have used his or her fingers to trace the lines into the clay. Another technique was to cut the glyphs into the clay with a sharp tool or dig out sections of the glyphs with their hands.

## What Does Kentucky Cave Art Look Like?

- Kentucky cave artists drew many different geometric designs, and animal and human figures.

When seen for the first time, Kentucky cave art appears crude. But this art isn't crude: it is "casual", "simple", "purposeful", "minimal." Simplicity can mask the sophisticated artistry of the maker. Minimal designs can be very sophisticated, expressing something recognizable in a simple way in order to convey the essence of the thing. Perhaps for all prehistoric artists, Archaic, Early Woodland, or Late Prehistoric alike, the act of drawing was more important than the end product. Since archaeologists have not found food remains in the ceremonial cave passages of Adair Glyph Cave and Crumps Cave, perhaps the placement of the glyphs was more important than the actual drawings themselves or their "quality."

Whether drawn in the mud, drawn in charcoal on the cave walls or isolated fragments of ceiling breakdown, or pecked into cave walls, we need to remember that prehistoric cave artists did not work by the steady, bright light of today's carbide lanterns. Flickering torches were their only source of light. The movement of the fire's flame and the shadows it cast provided an element of animation to their art that today's steady cave lighting cannot duplicate.

Mud glyphs reflect the greatest diversity in Kentucky cave art. They occur in two caves used during two very different periods of time: Adair Glyph Cave, which was used during the Late Archaic period, over 3000 years ago; and Crumps Cave, where the glyphs are similar in style to Late Prehistoric period cave art found in southeastern United States caves beginning around 800 years ago. A dark patina on the drawings and on the untouched mud contrasts sharply with the bright orange clay revealed by the names and dates of modern vandalism and other recent disturbances.

The early mud glyphs consist exclusively of geometric elements. Zig-zags, crosshatching (or "grids"), and chevrons are the most common, but other elements are present as well. These include overlapping X's, curvilinear lines, asterisks, and possible snakes. Some of these elements occur in clusters: parallel zig-zag lines in rows of three or four; a pair of chevrons found with asterisks; and crosshatched areas in clusters, several covering oval areas outlined by a single line.

The later mud glyphs consist of geometric elements as well as human ("**anthropomorphic**") and animal ("**zoomorphic**") figures. They occur as individual elements and as a series of elements that make up a unit or "**panel**". Examples of individual elements include geometric designs such as stacked chevrons; **concentric** (having a common center) circles or nested circles; and an oval with lines across it. Other individual elements include images such as a shield, a **monolithic** ax (an ax with the blade and handle made of one piece of stone), or a hand surrounded by a circle. Figures also occur as individual elements. Examples include a rattlesnake with horns or antlers and maybe wings and claws; horned serpent-like figures; and human stick figures.

Panels of glyphs contain unique combinations of elements. One consists of a bird man (depicted as a stick figure with an inverted tail, and taloned hands and feet), a cross and circle, and a

possible mace. Another large panel consists of a group of five human figures. Two human stick figures (represented only by heads and torsos) and two more complete human stick figures flank a large, central pregnant female figure with legs that extend underneath the other four figures in the panel.

There are not as many examples of pictographs or petroglyphs in Kentucky cave art. Like the mud glyphs of Adair Glyph Cave, this art probably dates to the Late Archaic/Early Woodland period (around 3000 B.C.-200 B.C.), so there are not as many different kinds of elements. These examples occur at Salts Cave, Mammoth Cave, and Fisher Ridge Cave. Using charred cane torches, native artists drew mainly geometric pictographs, but a few animal figures have also been found. The geometric designs include crosshatching, zig-zag, and spiral elements, while the animal figures include a turtle, a horned salamander or lizard, a spider or a person holding a torch, and a snake or lightning bolt. Petroglyphs are geometric designs, consisting of crosshatching and random lines, or human stick figures.

## How Old Is Kentucky Cave Art?

- Prehistoric Kentuckians made cave art for nearly four thousand years, beginning over 4800 years ago and ending about 650 years ago.

Dating prehistoric cave art is hard to do. Many commonly used dating methods, like **stratigraphy** (the layers of soil built-up over time at a place) or association with other kinds of prehistoric artifacts, are not useful for dating cave art because of the special characteristics of the places where the art is found and of the art itself. In their attempts to date cave art, archaeologists have used **ethnographic** information (descriptions of traditional hunter-gatherers or farming cultures all over the world) and **ethnohistoric** accounts (histories of traditional American Indian lifeways) and have examined the order in which the lines were drawn. But the most useful ways to date cave art are to compare the style of the artist's renderings to styles of known age and to **radiocarbon date** the burned fragments of river cane torches left in the cave (as scattered fragments across the cave floor, or broken off in mud glyphs) or the charcoal stoke marks left by cane torches near the images.

The earliest dates for cave art in Kentucky, and one of the earliest dates for the whole southeastern United States, come from Adair Glyph Cave. Dates range from 2300-1600 B.C. for the mud glyphs in this cave. During this period of time, which archaeologists refer to as the Late Archaic period, prehistoric Kentuckians lived a mainly hunting and gathering way of life, but were beginning to experiment with domesticating native plants and growing their own food. They also were developing far-reaching trade networks that included the exchange of such items as copper and shell.

Radiocarbon dates for prehistoric exploration (2910-2460 B.C.) and mineral mining (1000-400 B.C.) at Mammoth and Salts caves may indirectly date the few pictographs and petroglyphs found there. Many of these examples of cave art may date to the Early Woodland period. At this time, native peoples in Kentucky hunted, gathered wild plants, and grew domesticated plants in their gardens. They began to make jars from clay, using these vessels for cooking, storing seeds, and carrying water. In some areas of Kentucky at this time, native peoples built conical

burial mounds and geometric **earthworks** (ceremonial mounds, often in elaborate shapes); and in the Mammoth Cave area, these native peoples mined the caves for minerals.

The radiocarbon dates for the mud glyphs at Crumps Cave (170 B.C. - A.D. 140 and A.D. 0-390) suggest that these images, too, were drawn during the Early Woodland period. There is a problem with these dates, though, since the style of the Crumps Cave mud glyphs are much more similar to prehistoric cave art produced at other cave sites in the Southeast between A.D. 1200 and A.D.1350. This style of cave art was made during a time period archaeologists refer to as the Late Prehistoric period, when indigenous peoples in Kentucky were living in villages or in large towns with platform mounds. Peoples of both of these settlement styles farmed for a living, but also hunted and gathered wild foods, and were involved in long-distance trade. The groups that lived in towns and built mounds had complex, socially stratified societies (societies with many classes). Their religion was based on ancestor worship, an earth/fertility cult, and a chiefly warrior cult. The artists of these cultures used a very recognizable art style. Designs in this style, found on shell and copper ornaments and on pottery vessels, were associated with the chiefly warrior cult. These are the artistic elements they also used in their cave art. While the beliefs concerning these designs and their use may not have been the same from region to region across the Southeast, the artistic styles themselves were well-known and widespread.

### **What Does Kentucky Cave Art Mean?**

- It is very difficult to understand what the images in the caves mean and why the prehistoric artists produced them. But at least for the mud glyphs, we can infer that they held special religious, ceremonial, or spiritual meaning for the people who drew them.

Cave art is very ancient and complex. From its origins among Late Archaic hunter-gatherers to its use by farming societies that shared complex religious beliefs across the southeastern United States, the function of cave art has undoubtedly varied.

The fact that this art is found deep inside caves, often in hard-to-access places, removed from observation by or interaction with the general public, rules out the public use of these designs. Thus, archaeologists can infer that cave art was probably used, especially in the case of the mud glyphs, for special ceremonial or ritualistic purposes. It is hard to say, though, if these symbols and panels represent the private efforts of individuals to enhance their own spiritual power or some kind of ritual to protect society as a whole.

Because archaeologists know more about the artistic symbols of the Late Prehistoric period than that of its predecessors, they can get an idea of the meaning of this cave art. The images in caves like Crumps Cave are similar in subject matter to some Late Prehistoric symbols drawn on ceramic vessels and shell, bone and copper ornaments. The contexts within which archaeologists have found these vessels and ornaments indicate that they reflect important social status or ceremonial behavior. Therefore, this cave art was probably steeped in the social order, religion and world view of its makers.

Late Archaic and Early Woodland cave art lacks any stylistic links to Late Prehistoric religious symbols or to design styles on contemporary artifacts found outside the caves. The meanings

are, therefore, more difficult to infer. Right now, archaeologists are limited in how much they can say about the meaning of the earliest cave art in Adair Glyph Cave, and in Mammoth, Salts and Fisher Ridge caves.

## **Are Kentucky's Cave Art Sites Preserved for the Future?**

- Although a few laws exist that afford some measure of protection for these fragile and significant places, most cave art sites are not satisfactorily protected from vandalism and are threatened by it.

Pictographs, petroglyphs, and mud glyphs are rare and very fragile. Because charcoal drawings and images etched in mud can wash away, and rock surfaces can erode over time, few of these sites have survived to modern times. The best examples are found deep in caves, where, because of special geological conditions, the ceilings, walls and floors of some cave passages remain virtually unchanged from prehistoric times.

They are preserved and were not discovered until recently because the passages in which they are located are often hard to reach. A modern cave explorer who is not observant, or thoughtlessly leaves graffiti in a cave, in addition to destroying the beauty of the cave, could be destroying prehistoric cave art thousands of years old.

At almost every cave art site in Kentucky, people have engraved, painted or etched modern graffiti on cave walls and in the mud deposits; and the foot traffic of modern cavers continues to threaten some sites. In some cases, modern graffiti overlie and have destroyed the prehistoric cave art. Some of this vandalism is inadvertent, done by people who are unaware of the age and significance of the artwork they are defacing; but some of the acts of vandalism are intentional.

Attempts to protect these sites have included using alias names to protect their location and identity. In 1988, the Kentucky General Assembly passed the Kentucky Cave Protection Act with the purpose of protecting Kentucky caves, and by extension, the cave art within them. Arranging for cave gating for the most endangered sites, as was done at Crumps Cave in 1993 is another way to stop vandalism, but this requires landowner commitment and funding. It is hard to find the financial resources to protect cave art sites, especially on private lands, and convincing the cave-using public to preserve cave art sites in specific cases remains problematic.

Unless we can preserve these sites from vandalism, Kentucky's prehistoric cave art will disappear. If you are a caver, be careful where you walk. Remember that prehistoric people undoubtedly preceded you into the cave. If you identify what you think is prehistoric cave art, notify the Kentucky Heritage Council ([www.kyheritage.org](http://www.kyheritage.org)) or the Office of State Archaeology at the University of Kentucky ([www.ky-osa@lsv.uky.edu](mailto:www.ky-osa@lsv.uky.edu)).

## **RESOURCES FOR EDUCATORS**

## Videos

Kentucky Archaeology Series, Volume I: Episode 3: Saving a Kentucky Time Capsule (9:00 min.) VHS. (2000) Voyageur Media Group for the Kentucky Heritage Council. This program documents efforts to preserve dozens of ancient American Indian mud glyphs discovered deep inside a Kentucky cave. Archaeologists Valerie Haskins and Dan Davis lead viewers on an unforgettable journey to see rare legacies from Kentucky's early artists.

This episode can be purchased from the Kentucky Heritage Council. The cost is \$10.00 per volume, plus \$4.00 shipping and handling. Call 502/564-6661, write the Council at 300 Washington Street, Frankfort, KY 40601, fax 502/564-5820.

Saving A Kentucky Time Capsule: A Companion Guide for Intermediate and Middle School Social Studies and Science Teachers has been developed for this episode by Judy Sizemore. It consists of eight classroom-tested, cross-curricular activities. The Series' web page provides detailed summaries of the episode and a brief description of this guide, which characterizes the lessons and lists the essential questions and the specific Kentucky Academic Expectations addressed in the guide. The companion guide is free and available in hard copy from the Kentucky Heritage Council or it can be downloaded from the Council's Archaeology Video Series web page in .pdf format: [www.kyheritage.org/video.htm](http://www.kyheritage.org/video.htm)

## Books and Articles

“Issues in the Study of Southeastern Prehistoric Cave Art,” by Jan F. Simek and Alan Cressler. Midcontinental Journal of Archaeology 26(2):233-250, 2001.

The Prehistoric Native American Art of Mud Glyph Cave, edited by Charles H. Faulkner. University of Tennessee Press, Knoxville, 1986.

“A Preliminary Report on the Mud Glyphs in 15WA6, Warren County, Kentucky,” by Daniel B. Davis. In Current Archaeological Research in Kentucky, Volume Four, edited by Sara L. Sanders, Thomas N. Sanders, and Charles Stout. Kentucky Heritage Council, Frankfort, 1996.

Of Caves and Shell Mounds, edited by Kenneth C. Carstens and Patty Jo Watson. University of Alabama Press, Tuscaloosa, 1996.

Rock Art of Kentucky, by Fred E. Coy, Thomas C. Fuller, Larry G. Meadows, and James L. Swauger. University Press of Kentucky, Lexington, 1997.

“Woodland Cave Archaeology in Eastern North America,” by George M. Crothers, Charles H. Faulkner, Jan F. Simek, Patty Jo Watson, and P. Willey. In The Woodland Southeast, edited by David G. Anderson and Robert C. Mainfort, Jr., pp. 502-524. University of Alabama Press, Tuscaloosa, 2002.

## Related Web Sites

American Cave Conservation Association: **[www.cavern.org](http://www.cavern.org)**

Select the “Cave Facts” link to read a variety of short articles on interesting topics; select “Kid’s Cave” for activities, including “Build a Sinkhole” and “Grow Your Own Crystals.” Also on this site (**url: [/caves.htm](#)**) is the National Caves Association list for commercial caves in Kentucky, useful for fieldtrip planning.

Cave Research Foundation: **[www.cave-research.org](http://www.cave-research.org)**.

Particularly useful for its list of cave resources, try the web site of the National Speleological Society: **[www.caves.org](http://www.caves.org)**. This organization also has information about grottos (local caving clubs) in Kentucky, and resources for planning a wild caving experience.

To compare Kentucky’s prehistoric cave art to rock art from all over the world, visit this web site: **[www.rockart-ccsp.com](http://www.rockart-ccsp.com)**.

This web site illustrates Arkansas rock art: **[www.rockart.uark.edu](http://www.rockart.uark.edu)**.

Go to this web site for links to other rock art sites: **[www.questorsys.com/rockart/links.htm](http://www.questorsys.com/rockart/links.htm)**.

The Kentucky Down Under/Kentucky Caverns site has basic articles on cave formation and ecology, as well as several cave-related activities for students: **[www.kdu.com](http://www.kdu.com)**.

Mammoth Cave’s web site includes several activities for the classroom and content sheets for students: **[www.nps.gov/macaca/home.htm](http://www.nps.gov/macaca/home.htm)**.

Take the Electronic Field Trip to Mammoth Cave: **[www.ket.org/trips/cave](http://www.ket.org/trips/cave)**.

The Cincinnati Museum of Natural History and Science features a permanent exhibit that interprets a Kentucky limestone cave. Go to **[www.cincymuseum.org](http://www.cincymuseum.org)**.

“Mammoth Cave: Its Explorers, Miners, Archaeologists and Visitors” is a lesson plan developed as part of the Teaching With Historic Places curriculum. It can be downloaded from this address: **[www.cr.nps.gov/nr/twhp](http://www.cr.nps.gov/nr/twhp)**

# LESSON PLANS

## Cave Art One: Introduction

<b>Grade Level:</b>	4-7
<b>Subjects:</b>	Science, social studies, language arts, art
<b>Skills:</b>	Knowledge, comprehension, analysis, evaluation
<b>Strategies:</b>	Brainstorming, discussion, visualization, drawing, writing, observation
<b>Duration:</b>	45 to 60 minutes
<b>Class Size:</b>	Any
<b>KERA Goals:</b>	1.1, 1.2, 1.3, 1.13, 2.16, 2.20, 2.23, 2.26

### Objectives:

In their study of cave art, students will use art materials, photographs, and cave art examples to:

1. Differentiate between symbol, petroglyph, pictograph, and mud glyph.
2. Interpret cave art to illustrate its importance in the cultural heritage of a people and as a tool for learning about the past.
3. Evaluate the importance of protecting cave art for study.

### Materials:

Transparency or copy for each student of A KENTUCKY CAVE ART PANEL

Clay or plaster of paris slabs (prepared ahead of time)

Paper

Paint, marker, or charcoal pencil

Paper clip

Copy of AN INTERPRETATION OF THE CAVE ART PANEL

### Vocabulary:

**cave art:** a general term for pecking, incising, or painting designs on cave walls, ceilings and ceiling breakdown, and in mud deposits on cave ceilings, walls, and floors.

**cave art panel:** a group of pictograph, petroglyph or mud glyph elements.

**petroglyph:** a design carved or pecked directly into stone.

**pictograph:** a design applied to a rock surface using mineral pigments or coloring.

**mud glyph:** a design incised or cut into mud deposits inside a cave.

**rock art:** a general term for pecking, incising, or painting of designs on rock surfaces.

**symbol:** an image, mark, or object which represents something else.

## **Background:**

Indian people throughout North America created cave art in prehistoric times. Its meaning is difficult to interpret. Some people think that cave art is a type of storytelling. Others believe it depicts religious or spiritual beliefs, while still others regard it as solely an artistic expression. Cave art is a special kind of prehistoric rock art, found deep within the earth.

North American cave art/rock art is not a true writing system that can be “read” like Egyptian hieroglyphics or a phonetic alphabet, although some researchers attempt to decode the symbols. Archaeologists analyze cave art figures and patterns, and frequently find that different cultural groups made different styles of cave art. Others analyze stories and information from Indian people to draw conclusions about cave art.

Some Indian tribes have oral traditions about rock art (and by extension cave art) and its meaning. Many Indian people believe that the spirit of the makers reside in what they have created; therefore, the art is living, and has a spirit. Whatever our responses to, or interpretations of rock art/cave art may be, it stimulates our thoughts and imaginations and expands our awareness of cultural expressions. Rock art and cave art can mean something different to each person who ponders it.

**TEACHER’S NOTE:** For more background information about Kentucky’s cave art, please refer to **Background for Prehistoric Kentucky Cave Art**.

## **Setting the Stage:**

1. Brainstorm examples of symbols meaningful to us today.
2. Give each student a piece of paper, a marker, a charcoal pencil, or paint; clay or plaster of paris slab and a paper clip. Ask them to flatten the clay into a slab and imagine that it (or the plaster of paris slab) represents mud deposits deep in a cave in west-central Kentucky; ask them to imagine that the paper is a cave wall or ceiling. Ask them to imagine they are living 2,000 years ago. Have them carve a symbol of their culture into the clay or plaster of paris (mud deposits) with the paper clip. Have them paint or draw this same symbol on the paper (cave wall or ceiling).
3. Show the students the words "pictograph", "petroglyph" and “mud glyph.” Ask them to determine which word fits which method of design and give reasons for their answers. Verify the correct answer and explain that all of the design methods are classified as cave art. Or, give them the definitions of the root words prior to determining the correct definitions:  
picto = to paint (Latin)  
graph = to write (Greek)  
petro = rock (Latin)  
glyph = carved work (Greek)

## **Procedure:**

1. Project the A KENTUCKY CAVE ART PANEL transparency. Explain that this cave art panel was created by the prehistoric people of Kentucky 800 years ago.
2. Use the following questions to analyze the cave art panel:
  - a. What words might you use to describe the symbols on this panel?
  - b. Why do you think people created these designs?

- c. If there is a message in these designs, what do you think it is?
  - d. Specifically, what might the message be in the symbol labeled with a, b, e? Using the AN INTERPRETATION OF THE CAVE ART PANEL handout, share the archaeologist's interpretations of this symbol.
3. In what ways might cave art be important to archaeologists' study of ancient people?
  4. How might vandalism to cave art create problems for the archaeologist? for the descendents of the prehistoric cave artists? for all of us?

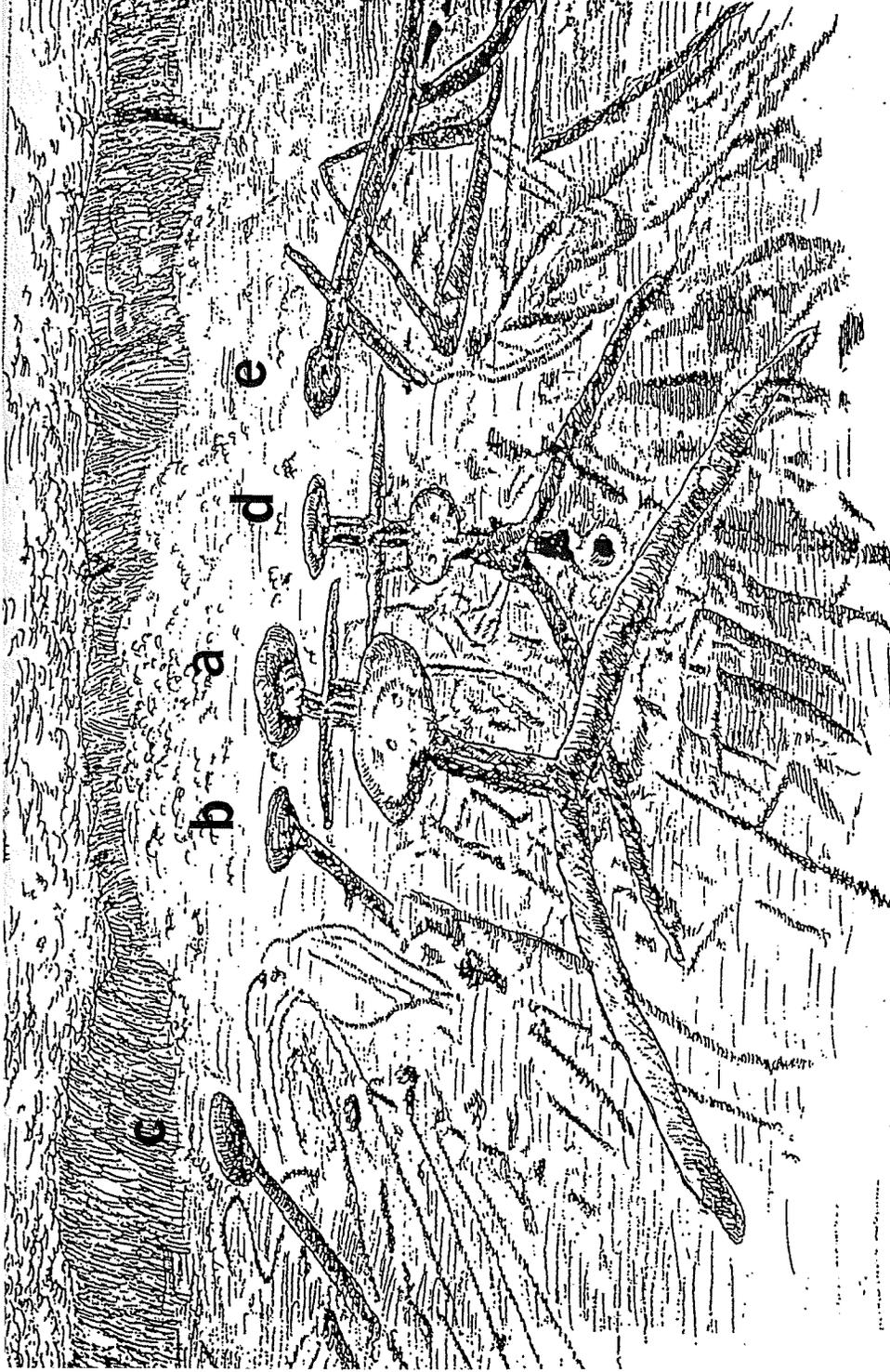
**Closure:**

In summary, why is the preservation of cave art important?

**Extension:**

Instead of answering the last question as a group, require students to answer it individually in a story, poem, essay, advertisement or song.

## A KENTUCKY CAVE ART PANEL



This is a drawing of Glyph 16, a mud glyph located in Crumps Cave. Daniel B. Davis, an archaeologist who has studied Crumps Cave, drew this picture. He published his research on the cave's mud glyphs in 1996. When he drew the glyph panel, he purposely left out initials that vandals had carved over the glyphs, so that we could see what the panel would have looked like before it was vandalized. We numbered the figures to go along with the discussion questions.

## AN INTERPRETATION OF A KENTUCKY CAVE ART PANEL

Glyph 16 at Crumps Cave is a mud glyph panel of anthropomorphic figures, the only ordered glyph in the cave. Drawn on the western wall of the cave passage, it measures 2.5 m (8.2 feet) wide by 1 m (3.3 feet) high. It consists of five human figures: a large central figure flanked by four smaller figures, two on either side. A long area of crosshatching appears along the base of all of the figures in the panel.

The central figure (a) is substantially larger than the other figures. The legs are splayed wide, are oversized, and appear to extend beneath all of the other figures in the panel. The figure appears to represent a pregnant female. The two figures on the left (b and c) are represented only by heads and trunks. Their gender is unknown. One of the figures on the right (d) is a smaller version of the central figure. Although its gender is less obvious, it is probably a female. The second figure on the right (e) is oriented at an angle to the other figures. A large triangle pierces the side of this figure and passes completely through to the other side. This figure's gender also is not obvious, but is probably a male, possibly "killed" by the triangle.

After studying the mud glyphs at Crumps Cave, drawing the glyphs, and researching other examples of cave art, especially mud glyphs in the Southeastern United States and their meaning, archaeologist Daniel B. Davis offers the following possible interpretations of Glyph 16:

**The placement of the panel beneath the earth on the west side of the cave passage alludes to death, fertility and change.** In the belief systems of the indigenous peoples of the Southeast, each of the cardinal directions were associated with a series of social values. West was often associated with death. Similarly, they divided their cosmos into three worlds: This World, which existed on the earth's surface; the Upper World, which existed above the sky vault; and the Under World, which existed beneath the earth and the waters. The Under World was associated with inversions, fertility, disorder, and change.

**The ordered layout of the panel reflects a dualistic structure/a structural balance.** Indigenous peoples were concerned with maintaining balance between opposites (such as good and bad/male and female/clean and unclean) as the path to the good life. For the panel as a whole, the pair on the left (spirit world) may represent balanced opposites to the pair on the right (the living). But each pair may represent balanced opposites: the two figures to the right may represent male/female; death/life and the two genderless figures to the left also may represent balanced opposites.

**The large fertile female figure is an intermediary, balancing the world of the dead/the spirit world and the world of the living.** The central figure, a pregnant female, is a reference to fertility. The two figures to the right, one possibly female and the other one, possibly a male "killed" by the triangle, may be references to life/fertility and death. The two figures to the left, given their purposefully limbless, genderless bodies, may represent the non-physical or spiritual world.

**The Glyph 16 panel may be a depiction of a creation myth or another similarly important myth that links death and life/fertility.**

**The five figures may be a group of mythological characters.**

## Cave Art Two: Creating Your Own

<b>Grade Level:</b>	2-7
<b>Subjects:</b>	Science, art
<b>Skills:</b>	Synthesis
<b>Strategies:</b>	Visualization, drawing
<b>Duration:</b>	30 to 45 minutes
<b>Class Size:</b>	Any
<b>KERA Goals:</b>	1.1, 1.2, 1.3, 1.13, 2.16, 2.20, 2.23, 2.26, 2.27

### Objectives:

In their study of cave art, the students will use Kentucky cave art symbols or their own symbols to:

1. Create a mud glyph (or pictograph) replica.
2. Cooperatively create a "cave art panel."

### Materials:

Black construction paper

A box of cotton swabs

A roll of brown butcher paper

Crayons or markers

One cup of chlorine bleach diluted with an equal amount of water

Small paper or plastic cups

Transparency or copy for each student of KENTUCKY CAVE ART SYMBOLS

(This activity could also be adapted as a pictograph activity, using charcoal pencils or chalks to draw on paper.)

### Background:

Cave art occurs on hard rock surfaces of cave walls and ceilings and on fragments of the ceiling that fall down into the passages, called "cave breakdown"; and in soft mud deposits on cave walls, ceiling and floors. Rock art in general occurs all over the world, in virtually every culture, and surviving examples of cave art are known to be as old as 30,000 years, from the time of the last Ice Age.

**TEACHER'S NOTE:** For more background information about Kentucky's cave art, please refer to **Background for Prehistoric Kentucky Cave Art**.

### Setting the Stage:

Distribute a copy of KENTUCKY CAVE ART SYMBOLS to each student or display it on the overhead projector. Give students time to observe and talk with each other about the symbols.

### Procedure:

1. Explain to students that they will be using symbols to make an artwork that resembles Kentucky mud glyphs or pictographs. They will also contribute to a "cave art panel." They may

use the symbols from KENTUCKY CAVE ART SYMBOLS for their artwork, or they may create their own.

2. Give each student a piece of black construction paper and a cotton swab. The art is created by dipping the cotton swab in bleach mixed with an equal amount of water and rubbing the wet cotton swab on the paper to form the desired design. Demonstrate the process, emphasizing to students that they must be very careful not to touch anything but the paper with their cotton swab. Place a jar lid with a small amount of bleach in the center of the work table or carry a small cup of bleach to each student and have them dip their cotton swab. They should only need one or two dips for the activity.

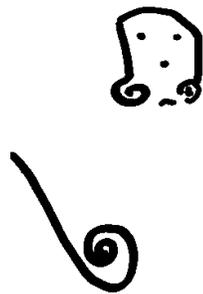
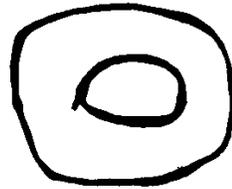
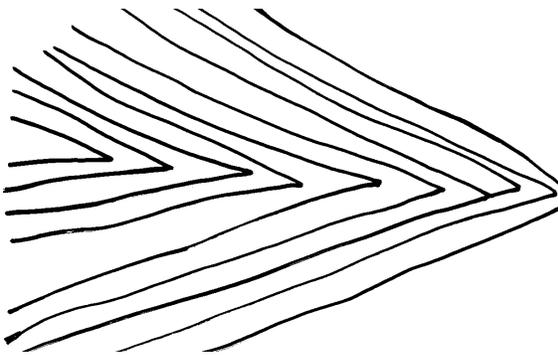
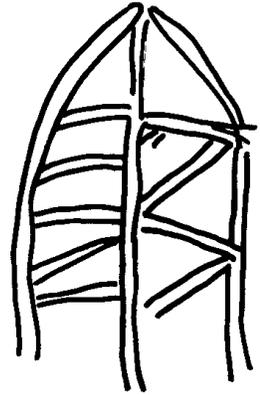
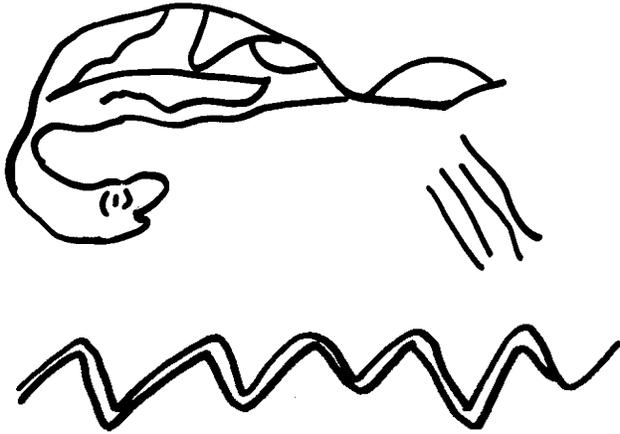
3. Lay the roll of brown butcher paper on a table or floor. Divide the class into groups no larger than 10 students. An adult aide for each group would be helpful. Alternatively, have only one group at a time do the activity.

4. After students have completed their own mud glyph or pictograph, they take turns making figures on the large piece of butcher paper. Space students a few feet apart, and have small groups work at a time. Exhibit the "cave art panel" in the classroom or hallway. The panel is used for an activity in the following lesson: **Cave Art Three: Protecting Our Past.**

### **Closure:**

Have students share the meanings of their cave art.

**KENTUCKY CAVE ART SYMBOLS**  
drawings after actual cave art designs



# Key to Kentucky Cave Art Symbols

Turtle Figure  
Mud Glyph  
Crumps Cave  
Warren County

Shield  
Mud Glyph  
Crumps Cave  
Warren County

ZigZag  
Mud Glyph  
Glyph Passage Cave  
Adair County

Concentric Circles  
Mud Glyph  
Crumps Cave  
Warren County

Chevrons  
Mud Glyph  
Glyph Passage Cave  
Adair County

Geometric Design  
Mud Glyph  
Crumps Cave  
Warren County

Turtle  
Pictograph  
Salts Cave  
Hart County

Cross-Hatching Design  
Mud Glyph  
Glyph Passage Cave  
Adair County

Human Figure  
Mud Glyph  
Crumps Cave  
Warren County

Human Face (?)

Devils Looking Glass  
Pictograph  
Mammoth Cave  
Edmonson County

Geometric Design

## **Cave Art Three: Protecting Our Past**

<b>Grade Level:</b>	4-12
<b>Subjects:</b>	Social studies, language arts
<b>Skills:</b>	Analysis, synthesis, evaluation
<b>Strategies:</b>	Observation, discussion, values clarification, brainstorming, decision making, problem solving, writing, drawing, invention, communication
<b>Duration:</b>	One to three 45-minute periods
<b>Class Size:</b>	Any; work groups of 3 to 4
<b>KERA Goals:</b>	1.1, 3.5, 3.6, 4.5, 6.1

### **Objectives:**

In their study of cave art, students will use a replica of a vandalized cave art panel to:

1. Examine their feelings about cave art vandalism.
2. Discuss ways to protect cave art and other archaeological sites.
3. Evaluate the Archaeological Resources Protection Act and the Kentucky Cave Protection Act.

### **Materials:**

"Cave Art Panel" created during previous lesson: **Cave Art Two: Creating Your Own.**

Photograph of vandalized cave art from a Kentucky cave

For each student or team, copies of FEDERAL LAWS PROTECTING ARCHAEOLOGICAL RESOURCES:ARPA and KENTUCKY LAWS PROTECTING ARCHAEOLOGICAL RESOURCES:KCPA; and PROTECTING CAVE OR ROCK ART: THINGS NOT TO DO

### **Vocabulary:**

**deface:** spoiling or marring the surface or appearance of something.

**vandalism:** willfully or maliciously defacing or destroying public or private property.

### **Background:**

America is fortunate to have many fine examples of rock art/cave art, and a rich archaeological heritage. Our past, however, is threatened by people who collect artifacts and dig sites as well as by those who vandalize rock art panels and cave art sites.

Collecting artifacts, digging sites, and defacing rock art/cave art has several harmful results. First of all, it destroys the evidence of people who lived here before us. Sites are very fragile, and one person with a shovel and ten minutes of time can destroy hundreds of years of prehistory. We and the generations of tomorrow are being robbed of the chance to learn about America's past.

Secondly, disturbing and vandalizing sites attacks the cultural heritage of American Indians. These sites are the burial grounds, homes and sacred places of their ancestors. Archaeological sites can represent part of their spiritual and cultural legacy. To destroy or deface these places can be the equivalent to someone vandalizing your home, church, or cemetery.

Finally, people who vandalize and destroy sites steal from all of us the opportunity to appreciate and understand other cultures. It is a personally enriching experience to gain a perspective on one's life and time by understanding how and where we fit in the human history of this land.

Some people who dig in sites are engaged in an illegal market activity, are armed with weapons, and should be considered dangerous. Never approach someone you see digging in sites or collecting artifacts. Instead, record information about them - their physical description, what they were seen doing, the license number of their vehicle - and immediately report them to a local law enforcement agency.

People enjoying recreation in the out-of-doors occasionally find archaeological sites, and wonder what they should do. Always leave artifacts where they are found, including small surface finds such as potsherds and spearpoints. Discoveries of rare or remarkable artifacts and sites should be reported to the land managing agency. In the case of private lands, report discoveries to an archaeologist; to the Kentucky Heritage Council (300 Washington Street, Frankfort, KY 40601; 502/564-6661 or [www.kyheritage.org](http://www.kyheritage.org)); or the Office of State Archaeology (1020-A Export Street, Lexington, KY 40506-9854; 859/257-1944 or [www.ky-osa@lsv.uky.edu](mailto:www.ky-osa@lsv.uky.edu)).

Go to [www2.cr.nps.gov/laws/laws.htm](http://www2.cr.nps.gov/laws/laws.htm) for an alphabetical listing of all the federal laws and regulations that pertain to and protect archaeological sites within the federal government's jurisdiction. You may find the complete text of the laws protecting archaeological sites in Kentucky (**KRS 164.705 - KRS 164.735; KRS 164.990, KRS 171.3801 - KRS 171.395, KRS 433.870 - 433.885, KRS 525.110; KRS 525.120; KRS 213.110; KRS 72.020**) at this web address: [www.lrc.state.ky.us/krs/titles.htm](http://www.lrc.state.ky.us/krs/titles.htm). To find a particular law, search first on the chapter number (the first three numbers) and then by section (the numbers after the “.”).

**TEACHER'S NOTE:** For more background information about Kentucky's cave art, please refer to **Background for Prehistoric Kentucky Cave Art**.

### **Setting the Stage:**

1. The purpose of the first part of this activity is to cause students to react to their "cave art panel" being defaced or threatened. You need to decide the best approach for your students. If the students are mature and if they will not think that school is an unsafe place, then anonymously deface the "cave art panel" by painting words over it. Say nothing to the students, but when they begin to talk about it, start the activity.

Alternatively, bring the cave art panel into the classroom and, holding a can of spray paint or a marker, ask "How would you feel if I were to write my name over the cave art panel you created? Would that harm it?" Connect their feelings about their rock art being damaged to how American Indians, archaeologists, and the public might feel when they see vandalized sites.

2. Show students a picture of defaced cave art (provided). Ask them how they feel about the vandalism of these ancient and irreplaceable cave art panels, and what they think should be done about it. It is important to move students beyond the "witch hunt," that is, trying to discover and punish the person who did the damage. Ask students to think of solutions for repairing the damage and preventing vandalism from happening in the future.

3. Distribute PROTECTING CAVE OR ROCK ART: THINGS NOT TO DO and have the students read this page.

**Procedure:**

1. Inform the students about the problem of people vandalizing archaeological sites, including cave sites, rock art panels, the remains of prehistoric villages and camp sites, mounds and earthworks, and historic buildings. Explain that vandalism includes a range of behavior, from picking up arrowheads to mining sites with a bulldozer.
2. Ask students to brainstorm: What are the harmful results of vandalism? They can brainstorm in the following categories: destruction of information, destruction of cultural heritage, destruction of historical appreciation; or they can be given the categories after brainstorming. (See the **Background** section for this lesson plan and the **Background for Prehistoric Kentucky Cave Art** for ideas to add to students' list.)
3. Distribute or project FEDERAL LAWS PROTECTING ARCHAEOLOGICAL RESOURCES: ARPA and KENTUCKY LAWS PROTECTING ARCHAEOLOGICAL RESOURCES: KCPA. Review ARPA and its penalties; review KCPA and its penalties.

**Closure:**

Ask students to propose an improvement to ARPA or to KCPA. As a class project, have students prepare their ideal law to protect archaeological sites.

**Extension:**

Have students create a pamphlet, a radio announcement, poster, advertisement, etc. that will communicate to others the importance of protecting archaeological resources. They should include a description of ARPA and KCPA, and might also include some of the ideas from PROTECTING CAVE OR ROCK ART: THINGS NOT TO DO. Students' products could be shared at visitor centers, libraries, a PTA meeting, a teacher convention booth or a school archaeology fair.

**PHOTOGRAPH OF  
VANDALIZED CAVE ART FROM A KENTUCKY CAVE**



This is a close-up photograph of the central figure and the two immediately flanking figures in Glyph 16 in Crumps Cave, taken by Daniel B. Davis during his research there. It shows how the panel has been vandalized: someone has carved the letters “D” and “B” (only the “B” shows in this picture) into the mud over the figure to the left of the central figure in the panel. Notice how the lines and the color of the mud for the vandalized letters are different than that of the prehistoric mud glyphs.

## **FEDERAL LAWS PROTECTING ARCHAEOLOGICAL RESOURCES: ARPA**

Federal laws provide for severe penalties to those who disturb and destroy sites more than 100 years old. The *Archaeological Resources Protection Act (ARPA)* was passed in 1979, and prohibits unauthorized digging and collecting of archaeological resources, including pottery, basketry, bottles, sites with coins or arrowheads, tools, structures, rock/cave art, graves and human skeletons. No person may sell or buy any archaeological resource that was illegally acquired. ARPA provides for rewards to people who supply information leading to the arrest and conviction of ARPA violators.

Penalties for those convicted of violating ARPA are:

1. First Offense: a person who breaks this law for the first time may be fined \$100,000 and spend one year in jail. If the cost of repairing the damage exceeds \$500, the offender may receive a fine of \$250,000 and spend two years in jail.
2. Second Offense: a person who breaks this law for the second time may be fined \$250,000 and spend five years in jail.
3. Vehicles and other equipment used in breaking this law may be confiscated.

ARPA applies to all public and Indian lands, including those administered by the U.S. Forest Service, Bureau of Land Management, the military, Fish and Wildlife Service, the National Park Service (for example, Mammoth Cave National Park in Kentucky), and the Bureau of Reclamation.

## **KENTUCKY LAWS PROTECTING ARCHAEOLOGICAL RESOURCES: KCPA**

The *Kentucky Cave Protection Act*, passed in 1988, prohibits anyone from disturbing or damaging cave surfaces or materials found inside caves. This includes breaking, carving, writing or marking on cave surfaces, or removing, destroying or defacing cave surfaces. It also prohibits excavating, removing, destroying or disturbing any burial grounds, historic or prehistoric resources, or archaeological or paleontological sites, including fossils, bones, relics, inscriptions, saltpeter workings or other remains of historical human activity. Archaeological investigations inside caves cannot be conducted without a permit from the Office of State Archaeology, and must be carried out under the supervision of the Office of State Archaeology and the Kentucky Heritage Council. Only a qualified professional archaeologist or qualified amateur can receive a permit, and in order to do so, they must explain their research goals and methods.

A person who is convicted of disturbing caves or removing an archaeological feature, either prehistoric or historic, without a permit from the Office of State Archaeology may be fined up to \$500 and spend three months to one year in jail. A person who is convicted of not carrying out all the terms of their permit from the Office of State Archaeology may be fined up to \$250 and spend three months in jail.

KCPA applies to all caves in Kentucky, except state owned caves or those designated as state archaeological sites. These cave sites are protected under the *Kentucky Antiquities Act* (KRS 164.705 – KRS 164.735).

## Protecting Cave or Rock Art: Things Not To Do

1. **Touching** cave or rock art with your hand can harm it.
2. **Making paper rubbings or tracings** may crumble the cave or rock art.
3. **Making latex molds** of cave or rock art should only be done by professionals if the cave or rock art is going to be destroyed by construction or development.
4. **Building fires nearby** can cause serious damage from smoke and high temperature.
5. **Taking it home.** Some selfish people steal cave rock art by using rock saws and chisels.
6. **Chalking** is harmful to the petroglyphs, and makes it impossible to use new methods of dating the figures.
7. **Re-pecking or re-painting** a difficult-to-see image doesn't restore it, but rather destroys the original.
8. **Defacement.** Insensitive people often paint or carve their names over cave or rock art, or shoot bullets at it. Defacement is a sign of disrespect for other cultures.
9. **Tunnel vision.** People like cave or rock art so much, they often forget to watch where they are walking and may trample or damage important artifacts.
10. **Disturbance of the ground.** Any ground disturbance, above or below ground, at an archaeological site is not allowed. Even too many visitors walking around may damage a cave or rock art site. Visitors should tread as lightly as possible.

(Adapted from Winston B. Hurst and Joe Pachak, Spirit Windows: Native American Rock Art of Southeastern Utah. Edge of the Cedars Museum, Blanding, UT, pages 25-26, 1989).