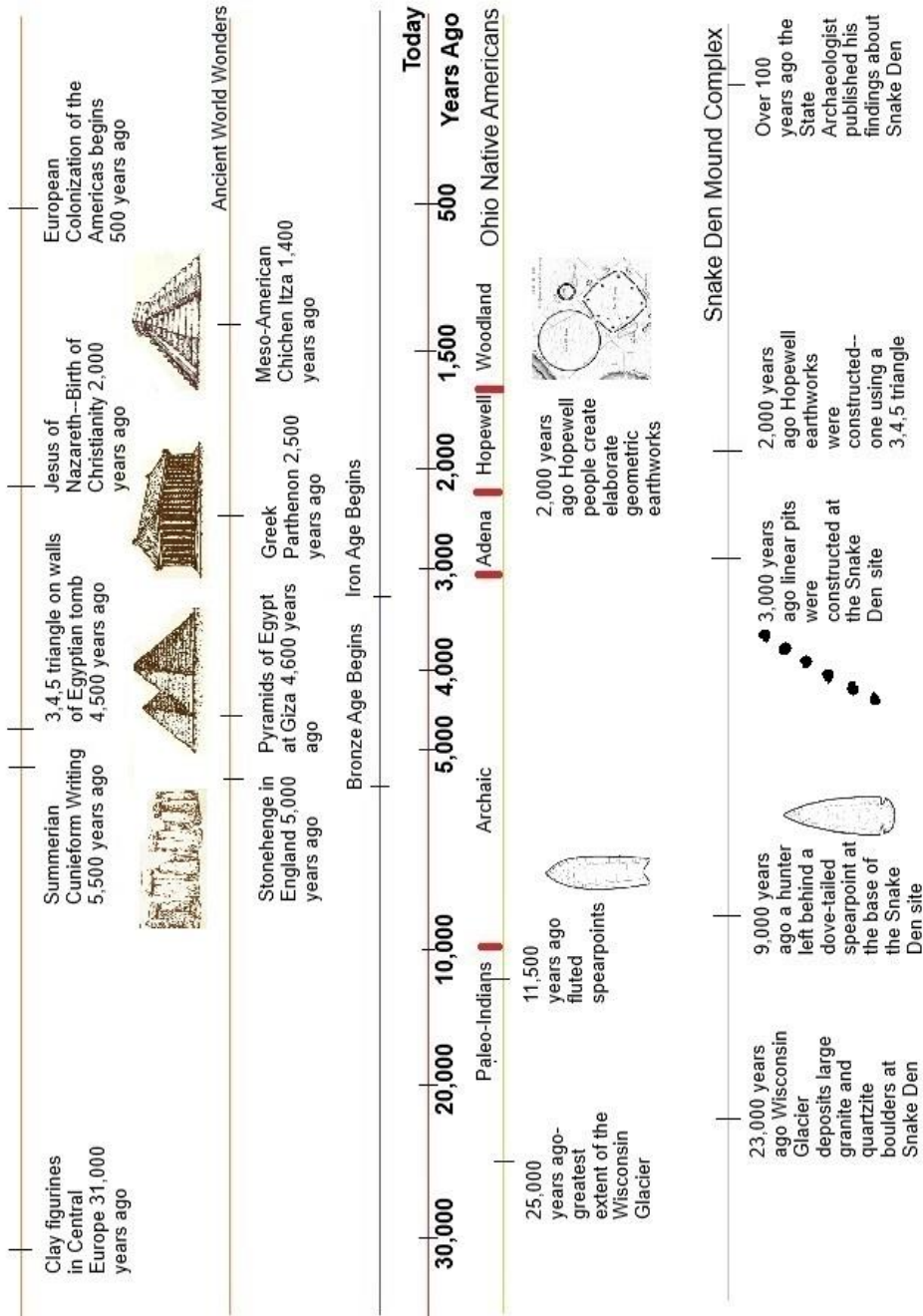


What could your students see and learn about when they go to the Snake Den Complex?

A timeline comparing events at Snake Den with others in the Ancient World





Dove tail spearpoint- Evidence that nine thousand years ago, Ancient Native Americans hunted and gathered edible plants, berries, and nuts in the Snake Den area. Many points that we call arrowhead points are spearpoints. These spearpoints were attached to a wooden staff that was thrown forward with great force at its intended target using something called an atlatl. Native Americans did not use bows and arrows until several hundred years after the Hopewell culture.



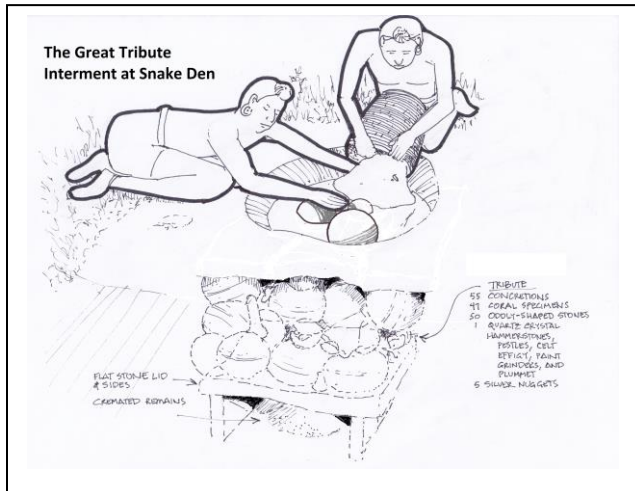
Linear pits—Evidence that the Snake Den Site was important to some cultural grouping almost 1,000 years before the Hopewell used the site to conduct sacred ceremonies. These pits are evidence that the first cultural group to use the site were associated with either the Late Archaic or Early Adena cultural periods.

Snake Den Linear Pit radiocarbon dated 900 BCE.

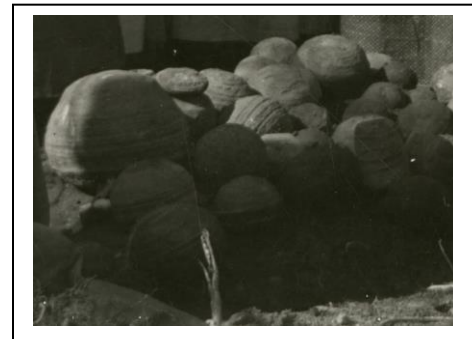


Solar alignments—Evidence that the sunrise (or sunset) on certain dates were permanently marked with earthworks at the Snake Den Complex. The Summer Solstice occurs around June 20th and the Winter Solstice is around December 23rd. The Fall Equinox happens on September 23rd and the Spring Equinox March 21st. Snake Den has a special alignment that happens halfway between the Spring Equinox and the Summer Solstice sunrise on or about May 1. In the Fall, this alignment happens halfway between the Autumn Equinox and the Winter Solstice during the sunset on or about

October 31st. How is that like days we celebrate? Well, in the Spring we celebrate May 1st as May Day and we celebrate October 31st as Halloween.



Examples of artifacts and geologic material from the “Great Tribute”—Evidence that the remains of a person of great importance to the users of the Snake Den Site that was buried on the edge of the middle Platform Mound. The Snake Den people celebrated the life of the person by burying a large collection of geologic and man-made artifacts above their burial vault. This includes concretions, quartz crystal, polished stones, and more. Discovered in 1897.



Fifty-five concretions



Quartz crystal



Stone celt for chopping wood

Students will get to examine samples of the types of local coral that were collected and buried in the “Great Tribute.”



Horn coral found on site.



Snake Den Silver Nuggets—the story behind the silver nuggets and their journey from a celebrated museum attraction in Columbus to becoming lost to history.



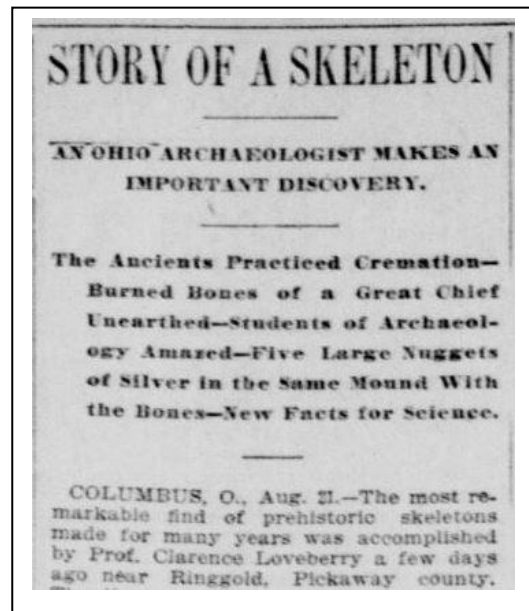
The only remaining silver nugget in the current Snake Den Collection at Ohio History Connection.



Associated Press Illustration Imagining what was discovered at Snake Den.

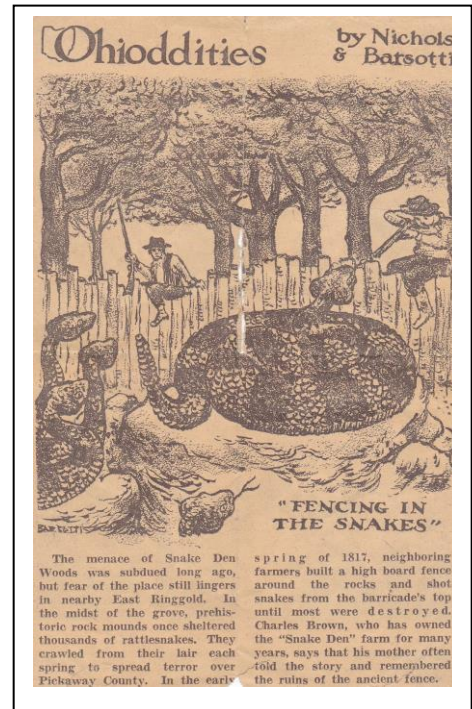
Ohio's State Archaeologist's report on the discoveries at Snake Den was published in hundreds of newspapers across America. This is from the Seattle Intelligencer.

National news coverage—Newspaper article evidence that the discovery of the silver nuggets and the Great Tribute material appeared in major newspapers across America.



The Great Snake Massacre of 1817—Local farmers were so upset that snakes scared their plowing horses and sometimes invaded their homes that they built a large wooden enclosure around the stone and platform mound to contain the snakes emerging in the spring. They were on alert as to when they began leaving this den. When that happened the neighboring farmers were alerted. They came to shoot or bludgeon them to death.

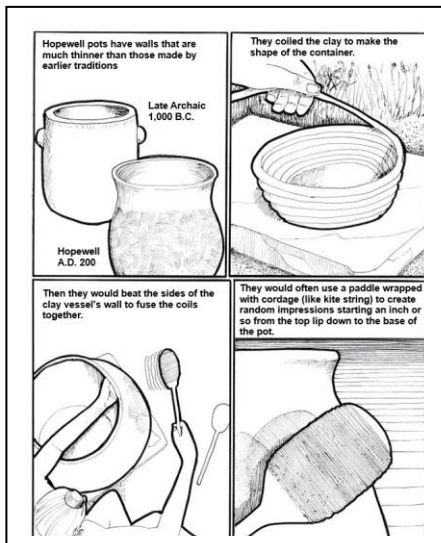
1930's article in the Cleveland Plain Dealer



Melted rocks—Evidence of fires at the so-called Crematory on the middle Platform Mound that it produced iron slag, which requires a melting temperature of 2,800 degrees Fahrenheit. There is evidence that the Hopewell deformed some rock specimens at one other site using heat, but this was done with nothing like the temperatures required to recrystallize iron at Snake Den.

Students will get to examine some examples of burnt and melted rock discovered in the Snake Den Crematory



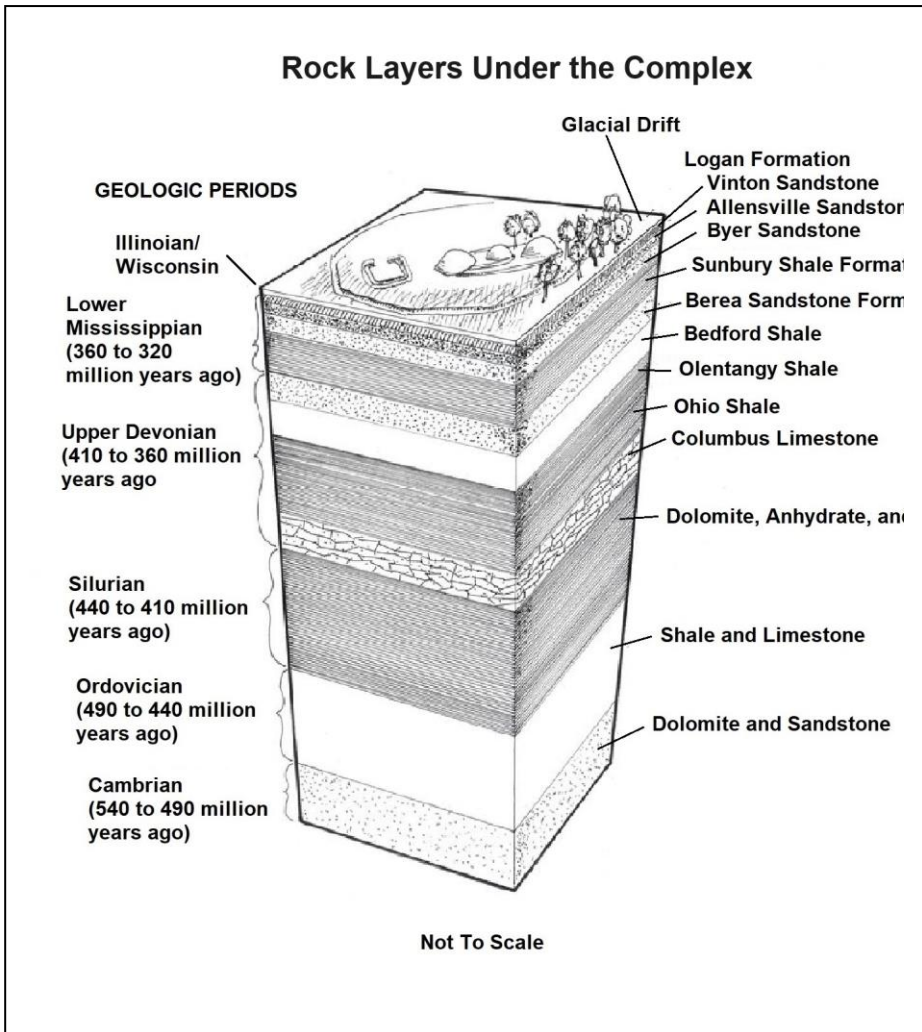


How the Hopewell lived—Evidence of daily life tools in a display and Comic Book drawings that illustrate how the Snake Den area Hopewell lived their daily lives—like how they made their cooking pots from coiled clay or common tasks for children or ground up hickory nuts using a mortar and pestle to make an edible flour.



Using granite stone pestle to grind seeds





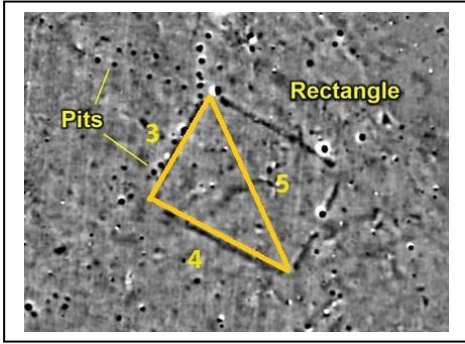
Geologic layers under Snake Den—Evidence of the sedimentary rock layers beneath the Snake Den site and Comic Book drawings that describe how these layers were deposited at this site and the role of glaciers in forming the hill upon which the Snake Den Complex rests. A hike up to Snake Den will reveal boulders brought to Snake Den from Canada by a glacier. WE ALSO HAVE AN EXPERT VIDEO.

Ohio Shale example



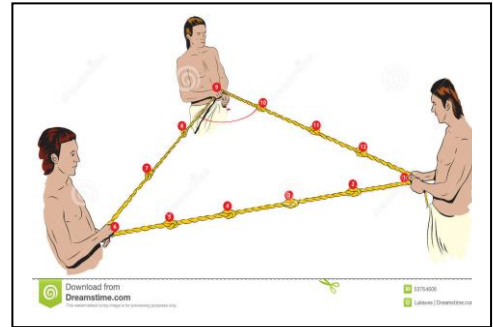
Berea Sandstone with ripple effect

Students will view local sandstone outcroppings in a stream bed below the Snake Den Complex that shows some of the Berea Sandstone that was formed here and will get to touch examples of some of the rock formations under the Complex



Signs of an advanced culture—Evidence that the Hopewell culture was indeed advanced was memorialized in a rectangular earthwork at the Snake Den Complex. This rectangle has a 3-unit side and a 4-unit side with a 5-unit diagonal. The 3,4,5 triangle embedded in this rectangle is an advancement in knowledge that was used by the Babylonians, Egyptians,

Greeks, and Romans to square up monuments and buildings. The Hopewell also used this relationship to square earthworks.



Egyptian 3,4,5 right triangle knot method

Students will get to form a right triangle using a string.



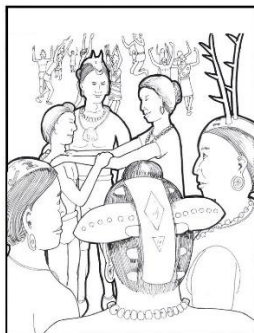
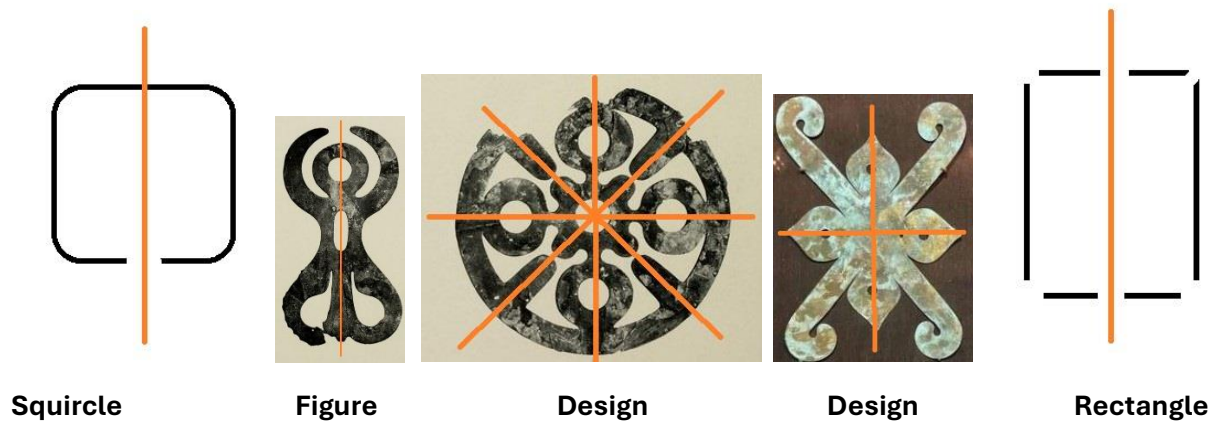
Birdseye view of the Snake Den rectangle



Hopewell math—
 Evidence of Hopewell math is present in more than that special rectangle. There are circles and a special Hopewell shape—a Squircle on the Snake Den site. A squircle is a square with rounded corners.

Interpretive mowing of the Snake Den Squircle

Symmetry in Hopewell math and art—In both art and math, "symmetry" refers to a concept where a shape or design can be divided into identical parts that mirror each other when flipped, rotated, or translated along a specific axis, creating a sense of balance and visual harmony; essentially, it means that one part of an object is the exact same as another part when transformed in a certain way, like a reflection in a mirror. Symmetry is present in the design of the Snake Den's squircle and rectangle, but this concept is also present in ceremonial artwork crafted by Hopewell artists.

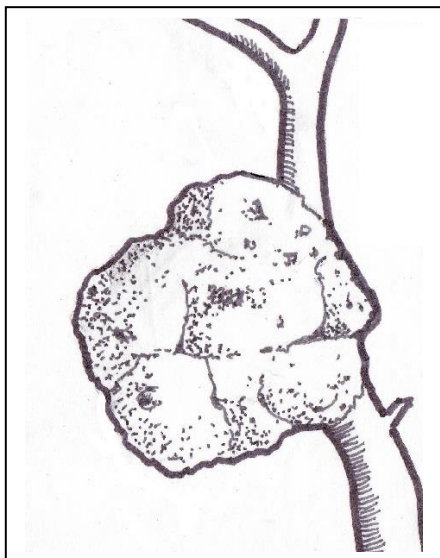


Symmetry appears in ceremonial copper headplates like these.



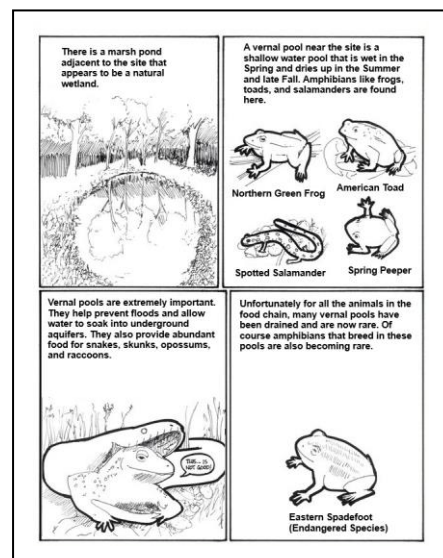
Native plants and animals—Evidence of the diverse plant and animal life present at the Snake Den site including skulls, fur, skins, shells, and more and examples of nuts and fruit produced by the trees and bushes on the site and even a strange parasitic fungus found there. A Comic Book also describes Snake Den’s bird, mammal, reptile, amphibian, and insect populations. It also describes the plant life and importance of fungi at the site. WE ALSO HAVE AN EXPERT VIDEO.

Students get to touch animal furs, skulls, and examine unusual specimens of plant life.



Snake Den provides a nature guide in a comic book format free to download.

Students will examine a fungal parasite that has attached to a Snake Den Bitternut Hickory Tree



Mysteries of Snake Den—What form did the missing effigy take? What do the flat black stones marking the burial of stone bowls signify? What was the purpose of the linear pits? What was the purpose of the woodhenges at Snake Den? Where is the enclosure to the east of the Barr's property located? Why is the fence line east of the mounds and squircle parallel to the alignment of the mounds? What is the full extent of the Snake Den Complex? When were each of the earthworks at Snake Den constructed?

Were Snake Den's Woodhenges similar in purpose to Stonehenge?



Stonehenge, England



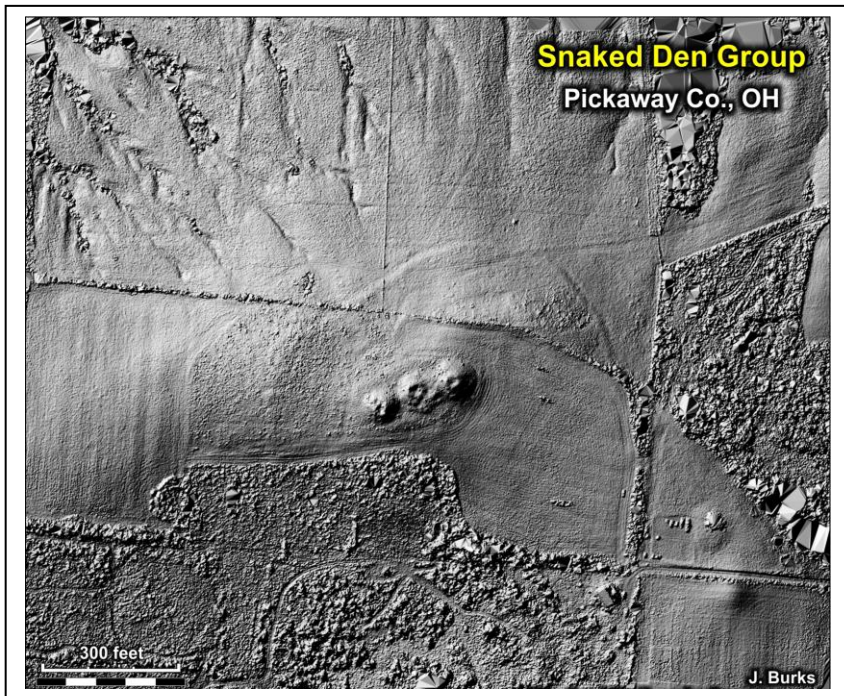
One of the apparent circular woodhenges at Snake Den as it might have appeared 2,000 years ago.

Western gateway—Evidence shows this opening in the outer enclosure is the entrance to this sacred site. This gateway is different from other Hopewell gateways in that the gateway turns inward instead of outward.

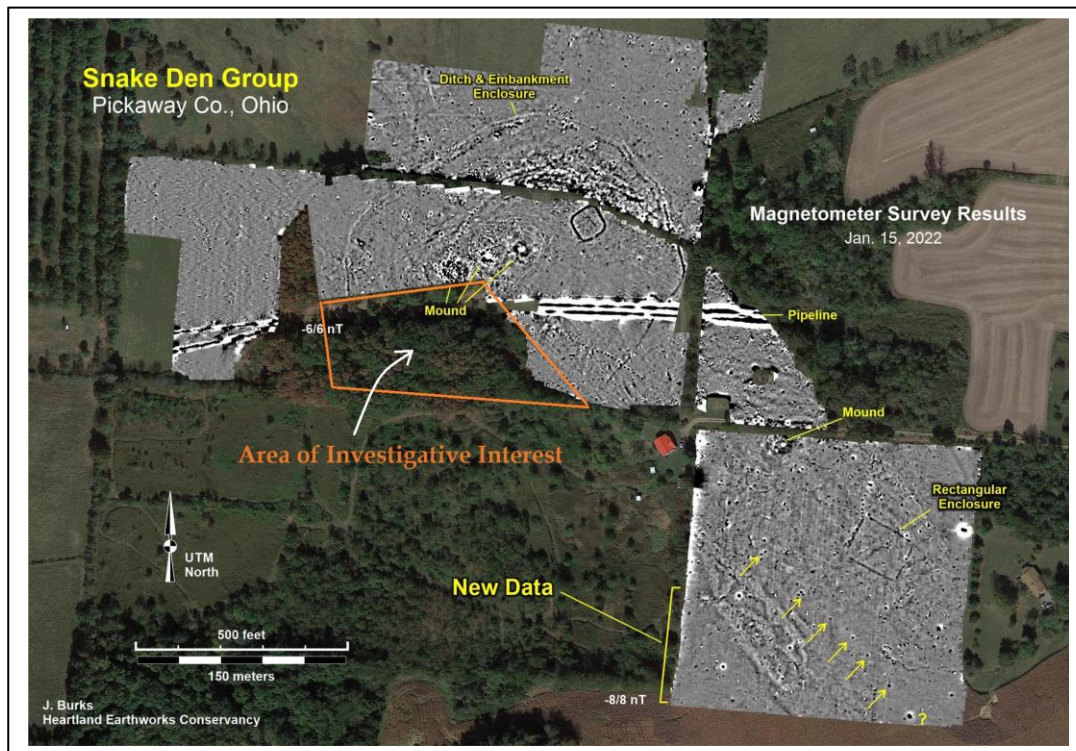


Animation of how Snake Den might have appeared 2,000 years ago

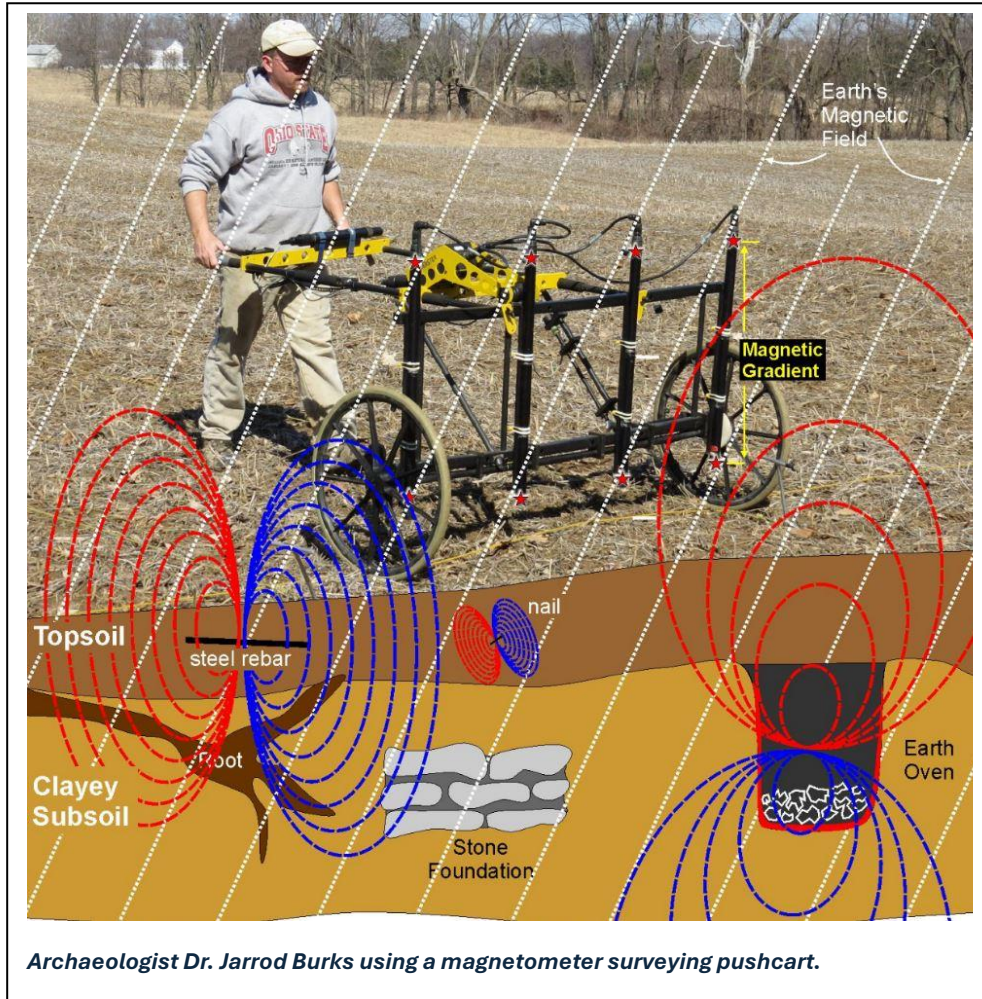
Non-destructive Archaeology—Explanation how Snake Den has been used to explore different technologies that allow Archaeologist to examine what lies beneath the surface at ancient sites like Snake Den.



High-definition LIDAR of the Snake Den Complex.



Magnetometer Survey of the Snake Den Complex.



A volunteer archaeologist explains how LIDAR and Magnetometer Surveying equipment help them identify earthworks hidden by trees and those below the ground.

Consider the types of Snake Den classroom and/or site experiences you would like your students to have with Snake Den:

- Guided hike up the mounds (Geology—rock layers underneath and glacier deposits, Prehistory—9,000 year-old spearpoint atlatl projectile, History—pioneer cabin location, Archaeology—crossing the outer enclosure). [20-25 minutes]
- An expert discusses how the Hopewell lived (Anthropology) by holding common person-made artifacts used during daily life. The expert will explain how we know what these people wore their hair and how they dressed. [20 minutes]
- An expert explains where the 'Great Tribute' was found and provides examples of the material they collected to place above the cremated remains for students to handle. Learn about the story of the Silver Nuggets found there. Learn about the other 1897 archaeological investigation discoveries and how they were depicted in national newspapers (American History). [15 minutes on site or an 8 minute in class video]
- An expert describes the kind of mammals that inhabit or use the site. Students get to handle animal furs, bones, teeth, and skulls to learn some key differences between carnivores, omnivores, and herbivores (Biology and Ecology). [15 minutes on site or a 12-minute in-class Snake Den ecology video]
- An expert describes the Stone Mound habitat for snakes and how 'brumation' for reptiles like snakes is different than 'hibernation' of some mammals (Herpetology). Students get to handle snake bones and skins. [10 minutes]
- An expert describes some of the diverse plant life found on the Snake Den site including fruit-bearing trees, nut-bearing trees, prairie plants, understory trees, fungal parasites, and mushrooms. Students get to hold and examine different Snake Den nuts and an example of a Bitternut History Canker (Botany). [10 minutes on site also included with the Ecology 12-minute in-class video]
- An expert provides survey posters and explains how magnetometers help archaeologists learn about earthworks that are not visible on the surface (Archaeology). The discovery of the linear pits and their dates determined by radiocarbon dating burned material in the pits (Physics) will also be discussed. [10 minutes]
- An expert describes Hopewell math and symmetry including the unusual squircle shape and the 3,4 rectangle. Students will use a 12 segmented rope to create a 3, 4, 5 triangle that the Hopewell and other advanced ancient cultures used square up their structures. The expert will also explain and show how the Hopewell people used symmetry in their artwork (Math and Art). [10 minutes]
- An expert describes several of the confounding mysteries associated with the Snake Den site including the creation of fires so hot that it melted iron in rock which can only happen when it reaches 2,800 degrees Fahrenheit. Students will handle some of the melted, lava-like rock (Vulcanology). [10 minutes]
- Experts describe the solar and lunar alignments at Snake Den and the Hopewell designated World Heritage sites at Newark and Mound City in Chillicothe (Archaeoastronomy). [17-minute in-class video]
- An expert visits your classroom to provide a short presentation about the Snake Den Complex that uses a 'Show and Tell' display box that contains geological material, person-made artifacts, melted rock, and unusual biological material that can be passed around after watching a 12-minute video followed by a Question and Answer period. [40-minutes in-class only]