

HERITAGE SPOTLIGHT



Kentucky Transportation Cabinet

SPOTLIGHT NO. 6

SOMETHING UNEXPECTED

Investigating the 8,500-year-old Canton Site in Trigg County, Kentucky

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WHAT Archaeological site (ancient hunter-gatherer base camp).

WHERE Trigg County in Western Kentucky.

WHEN Between 8,500 and 8,200 years ago, late in Kentucky's Early Archaic period.

SUBJECT Summarizes archaeological research that explores why Native hunter-gatherers lived at this camp, and describes the discovery of new spear point variants linked to the emergence of regional Native societies in this area 8,500 years ago.

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By the summer of 2011, it was time.

For the Henry R. Lawrence Memorial Bridge, it was *past* time. Crumbling, substandard, too narrow, unsafe. It had to be replaced. The nearly 80-year old bridge spanning the Cumberland River (now Lake Barkley) south of Canton in Trigg County, Kentucky, had been on the Kentucky Transportation Cabinet's (KYTC) radar for years.

As part of the bridge replacement project, the section of U.S. Highway 68/Kentucky Highway 80 leading to the bridge from the east had to be widened and shifted south. Federal laws require archaeologists and historians to inventory and assess cultural resources prior to road construction when federal funds are used. If an important archaeological site is in a proposed road right-of-way, KYTC has two choices. They can relocate the proposed road and protect the site, or excavate a sample of the site if the proposed road cannot be moved.

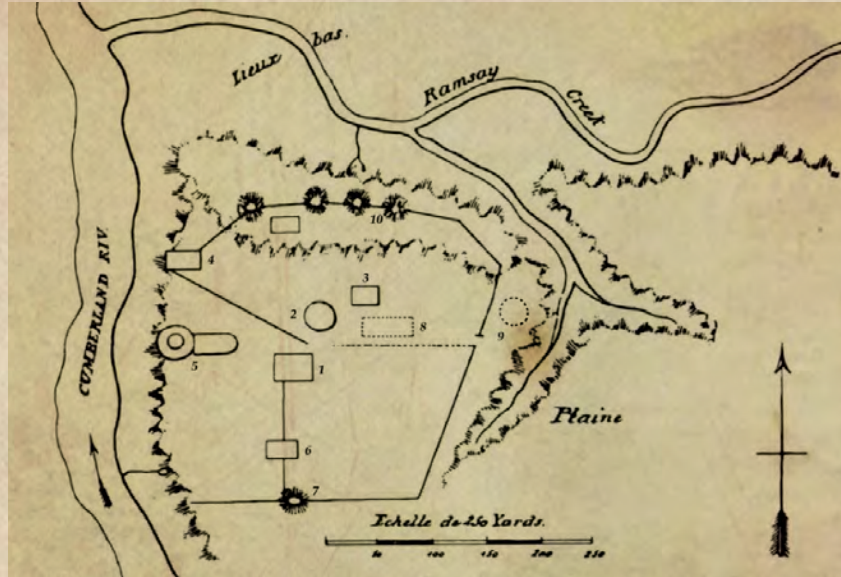
For this highway project, there was no

question what choice KYTC would make. Transylvania University botany professor Constantine Rafinesque had seen to that in 1823 when he recorded Indian mounds at



Above The two Parker Truss spans of the Henry R. Lawrence Memorial Bridge in 2009. Constructed in 1932 to replace the ferry that carried passengers across the Cumberland River, the bridge was rehabilitated in 1944 and then elevated in 1963 to accommodate the waters of Lake Barkley. KYTC demolished it in 2018 to make way for a newer, wider, and safer bridge.

Right Rafinesque's 1833 map of the Indian town at Canton overlooking the Cumberland River. Millennia before mounds were even a glint in a chief's eye, small groups of people camped at this spot on the bluff, 40 feet above the Cumberland River floodplain.



Canton. In fact, as part of the road construction project, KYTC planned to build a pull-off on the south side of U.S. Highway 68/Kentucky Highway 80. There they intended to erect a sign describing the long history of archaeological research at Canton. In an unexpected twist of fate, excavations at the proposed pull-off revealed an unknown, and much older, chapter of ancient Native history on the Canton blufftop.

Archaeology At Canton

On June 23, 1823, the year the tiny bluff-top hamlet of Boyd's Landing was renamed "Canton," Rafinesque traveled from Lexington to map and describe the remains of the ancient American Indian town located

there. Around A.D. 1150, centuries before Europeans founded Boyd's Landing, Native peoples had founded their *own* town on this very spot, and had lived there for 150 years.

Rafinesque's map shows a site covering about 35 acres. It includes at least nine circular and rectangular flat-topped platform mounds enclosed by a 3 to 5-foot high and 15 to 20-foot wide earthen wall (see sidebar on page 4).

Since European settlement in 1799, Canton's residents had known about the Indian site in their community. Down through the centuries, construction projects – trenches dug for house foundations and later, for water lines – had offered up evidence of the long-ago village farming people. In fact, *any* kind of ground-disturbing activity

in Canton could turn up artifacts: when townspeople dug holes to plant new bushes in their front yards, or when they prepared their vegetable gardens for planting in the spring, and especially, when looters came to town to dig indiscriminately.

Nearly 170 years after Rafinesque documented the Indian town, professional archaeologists returned to Canton in 1992. They mapped the mounds with modern surveying equipment and collected artifacts in order to figure out the site's history of human occupation. In 2007, archaeologists visited Canton again. This time, they documented a small section of the site's thirteenth-century residential area (see sidebar on page 8).

Archaeological Research 2011-2015

In the summer of 2011, archaeologists surveyed in the proposed right-of-way area south of U.S. Highway 68/Kentucky Highway 80 where the pull-off was planned. The area was level, but this was deceptive. In the southeastern corner of the survey area, the "level" ground covered a large sinkhole, filled-in with sediment during the early 1960s when the bridge was raised. This topographic feature, hidden from view in 2011, would play an important role in the research to come.

This sinkhole is not the only blufftop sinkhole near Canton. That is because the bluff extending along Lake Barkley marks the westernmost edge of Kentucky's Western

Pennyroyal Karst Area (see map, page 7). Limestone lies beneath this rolling upland of sinkholes, sinking streams, caves, and springs.

Investigators expected – and found – artifacts linked to the ancient Indian town during their survey. However, in archaeology, you can always count on the *unexpected*, too. And at Canton, this took the form of artifacts linked to a much earlier human occupation – millennia earlier!

So, three years after their survey, and 190 years after Rafinesque’s visit, archaeologists began research in an area between the bluff edge and the sinkhole. Using mechanical equipment, they removed twentieth-century fill dirt that covered much of their study area. Beneath it, they discovered extensive archaeological deposits – the remains of an 8,500-year-old Indian

encampment – perched on the edge of the sinkhole. The fill dirt had protected the camp from the impacts of plowing and other land-disturbing activities.

Those long-ago Canton site inhabitants had followed a hunting and gathering way of life at a time when the landscape and climate of the Western Pennyroyal Karst Area was changing. Theirs was a very different life from that of their mound-building descendants. And although the ancient farming people likely did not know it, by establishing their town north of the sinkhole, they were coming home to a place their ancestors had lived nearly eight thousand years before.

This spotlight shares what the archaeologists unexpectedly discovered about those long-ago hunter-gatherers.

What Archaeologists Documented

Based on their 2014-2015 investigations, archaeologists discovered a 4 to 16 inch-thick *midden* (trash) deposit along the sinkhole’s western rim. These deposits also draped over the rim and extended down into the sinkhole. The midden contained dense quantities of many different kinds of artifacts. Investigators also found six refuse pits and places where two possible posts had once stood (perhaps parts of separate drying racks), along with fire-reddened soil from long-ago campfires. Large amounts of fire-cracked rock also were recovered. Fire-cracked rock is typically associated with hearths and activities that took place around them like roasting meat, lining the bottoms of earth ovens to bake food, and heating or boiling water.

Their research showed that for 300 years, hunting and gathering peoples had camped repeatedly on a low rise next to the edge of the sinkhole (see sidebar on page 10). This occurred toward the end of a period archaeologists call the *Early Archaic*, which lasted from 10,000 to 8,000 years ago.

Artifacts

The Canton site’s late Early Archaic residents had likely used tools made of bone and wood. We know this from research carried out at contemporary sites. However, investigators found few examples made from these perishable materials at Canton. Such items

Right Excavating south of U.S. Highway 68/ Kentucky Highway 80 in the proposed highway pull-off location in 2014. Note the highway in the background.



Professor Rafinesque and the Canton Site

Constantine Samuel Rafinesque was born in 1783 near Constantinople in the Ottoman Empire and self-educated in France. He was a professor of botany at Transylvania University in Lexington, Kentucky from 1819-1825. Considered an “eccentric naturalist,” by John James Audubon, Rafinesque also was interested in archaeology and in Kentucky’s ancient peoples. He traveled across the state, inventorying, documenting, and mapping their mounds and earthworks.

Rafinesque’s 1823 work at the Canton site was significant, considering the time in which he lived. Subsequent research has shown that his map is quite accurate. Time has not been kind to the site, however. House and church construction, bulldozing and plowing, and looting have completely destroyed or heavily impacted most of the mounds.

Today, only Mound 1 and Mound 5 are clearly visible (see map, page 2). Mound 1 is a large rectangular platform mound located about 260 feet east of the edge of the Cumberland River (Lake Barkley) bluffs. At one time, it stood about 30 feet high. When mapped in 1992, however, it stood only 13.1 feet tall and measured 65.6 feet long and 49.2 feet wide. Mound 5, located west and slightly north of Mound 1, overlooks the lake from a bluff spur. Mapped as two circular/elliptical platforms in 1823, today it is a small conical mound. Subsequent researchers have been unable to verify Rafinesque’s earthen wall.

Rafinesque left Kentucky and moved to Philadelphia in the spring of 1826 after quarreling with Transylvania University’s president. In 1833, he published an article describing the Canton site in detail. In it, he predicted that, over time, plowing and the removal of trees would render the site less visible. Time has proven Rafinesque correct, but by recording the site, he brought it to our attention.



Left Portrait of 27-year-old Constantine Rafinesque, attributed to the English miniature portrait painter William Birch.

do not preserve well at sites in the open.

In contrast, archaeologists recovered nearly 500,000 artifacts manufactured from stone. Most were made from locally available *chert* (flint), the raw material of choice for chipped stone tool making throughout ancient Native history.

Chert is a hard, fine-grained, sedimentary rock made of microscopic quartz crystals. It is brittle, breaks in a predictable way, and produces an extremely sharp and durable edge or tip. It is the perfect raw material for making cutting, piercing, or slicing tools.

During tool manufacture, ancient flintknappers produce chert flakes and shatter called *debitage*. Each step in the process creates particular kinds of *debitage* as the knapper moves from working with the raw material in its original form to the finished product, such as a spear point or knife.

Flintknappers routinely resharpen their stone tools, producing *debitage* in the process, because through use, the edges break easily and become dull quickly. While *retouching* (blunting, sharpening, or refining the tool edge) often makes an edge somewhat duller, *retouching* also makes tool edges thicker and stronger. This, in turn, makes the tools more useful.

Not surprisingly, then, *debitage* was the most numerous artifact found at Canton. Analysis of the Canton site’s *debitage* showed that all stages of chipped stone tool manufacture occurred there. However, the middle and later stages were



Above Early Archaic Kirk Stemmed spear point variants recovered from the Canton site, made from locally available St. Louis (tan) and Fort Payne (grey) cherts.

Above Right During heavier jobs, like cutting fresh hide and tendons, or removing deer and elk antlers during butchering, users ran the risk of snapping the blade. If they broke the tool, they often recycled the spear point base into another tool, like drills (shown here) or an endscraper, instead of throwing it out.



Click on the tool to rotate.

better represented. What this means is that the Canton site flintknappers probably prepared *blanks* (unfinished tools) elsewhere, possibly at the source, and then brought them back to camp to finish making the specific implements they needed.

Investigators recovered nearly 4,300 well-crafted chert tools. The most common spear points were Kirk Corner-Notched, Kirk Stemmed, and variants of Kirk Stemmed (see sidebar on page 11). Early Archaic flintknappers bound spear points to wooden shafts using animal *sinew* (a tendon, often a deer's, prepared for use as a cord or thread). They probably launched their spears or darts using an efficient weapon system called the *atlatl* (spear thrower). An atlatl propels a dart much faster and more accurately over longer distances than does a spear thrown with the unaided human arm (see drawing, page 9).

Kirk spear points also were convenient multi-purpose tools. Native people likely carried them, like people carry pocket knives today, to be on-hand for any situation. The Native people used them for a variety of tasks, such as sawing and scraping, and cutting and slicing.

Drills were helpful for piercing soft material, such as leather, during clothing manufacture. Craftspeople also used drills to make beads or pendants from shell or bone. With a twisting motion, they made small circular holes in these harder materials.

Endscrapers were one of their most versatile tools. *Hafted* endscrapers (inserted



Above Archaeologists working at the Canton Site in 2015. From left to right: screening soil; excavating and placing soil into a bucket for transport to the screen; and mapping a unit wall profile. The crew wear vests for safety. Equipment, personal packs, and plastic unit covers are scattered on the margins of the excavation block.

into a bone or wooden handle) were used to prepare animal hides for tanning. Removing the hair, fat, and meat from a hide was a very important, but time-consuming, process. If any fat and meat remained, the hide would not tan evenly. The handle helped increase the amount of pressure the tanner could put on the hide during scraping. Hafted endscrapers also were important woodworking tools.

Early Archaic flintknappers could quickly turn a flake into a tool by removing small flakes along its edge. Even though these objects, called *retouched flakes*, look more like debitage than formal tools, they were

important items in the Early Archaic tool kit. Retouched flakes functioned as scrapers or knives, and were used in a variety of tasks. These included cutting and slicing plants, butchering animals, and even slicing deer tendons into thin strips of sinew that could then be used to haft spear points, knives, and scrapers onto shafts or handles, respectively.

Archaeologists recovered stone tools at the site that were not made from chert. These included *manos*, a *metate*, pitted cobbles, and hammerstones, all made from sandstone or limestone. A mano and a metate are a composite grinding tool similar to a mortar and pestle. Native cooks used pitted cobbles, or the hand-held mano with the metate (the bottom stone) for grinding nuts, seeds, and other plants. Flintknappers used hammerstones to make chipped stone tools by knocking off the outer surfaces of cobbles to reveal the chert within.

A *celt* fragment made from nonlocal greenstone also was found. A celt is similar to an ax, but it lacks the deep groove stone axes have. Native peoples hafted celts into wooden handles, perpendicular to the handle axis, and used them for cutting down trees. Canton's residents could have gotten an unshaped greenstone rock from the Ohio River, many miles to the north, and made the celt. Or they could have gotten the finished tool through exchange with a neighboring hunter-gatherer group.

Small fragments of poorly preserved plant food and fuel remains were recovered from

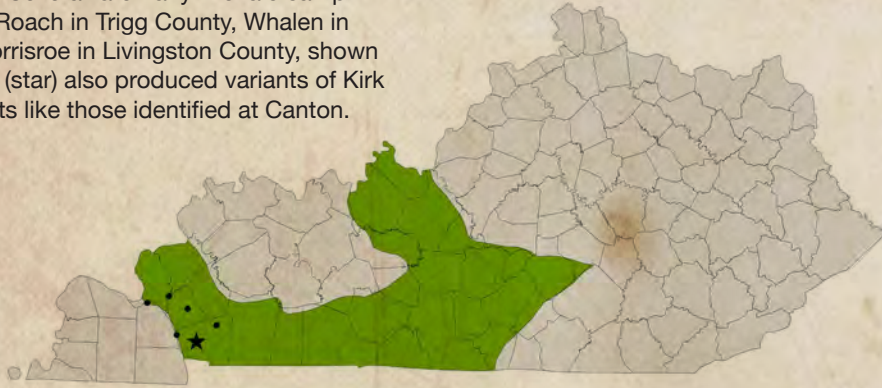
the site. Charred fuel remains included wood from various trees: hickory, red oak, white oak, sycamore, and American elm. Charred food remains – hickory nuts and seeds of grape, tick-trefoil (a wild legume), pin cherry, persimmon, raspberry, and pondweed – show that the site inhabitants collected plants in a variety of contexts. These included dry, well-drained uplands and wetlands, like the sinkhole and nearby floodplain.

Animal food remains from the site also were poorly preserved, fragmentary, and often *calcined* (thoroughly burned or burned



Above Hafted endscrapers made from St. Louis (tan) and Fort Payne (grey) chert. Notice the wider working edge of the two specimens on the top row, upper left corner. The specimen on the top row, upper right corner shows evidence of use along the working edge (top) and along its right side. It functioned as both an endscraper and as a side scraper (cutting tool).

Below The Western Pennyroyal Karst Area stretches in an arc from Livingston County southward to the Kentucky-Tennessee state line, then curves northward, ending in Meade County. Several late Early Archaic campsites (Lawrence and Roach in Trigg County, Whalen in Lyon County, and Morrisroe in Livingston County, shown as dots) near Canton (star) also produced variants of Kirk Stemmed spear points like those identified at Canton.



in very high heat). Still, these remains show that the residents hunted upland animals like white-tailed deer and smaller mammals, such as rabbit, groundhog, and squirrel. They caught freshwater drum, bass, gar, and sunfish in the Cumberland River. A variety of land and aquatic turtles – box, water, snapping, and soft shell – also were food resources. Residents may have collected some of these turtles from the sinkhole.

Activity Areas

Tool distributions across the site showed where the Early Archaic residents may have processed and tanned animal hides. Based on the distribution of particular types of chert, researchers identified two different tool-making spots. One was located in the central part of the excavated area. The

other only slightly overlapped the first.

Archaeologists recovered large numbers of chipped stone tools and flakes from areas where the sinkhole slope was steepest. These artifact distributions show that site residents tossed their garbage down-slope and into the sink.

Interpretations

Based on their 2014-2015 research, archaeologists determined that late Early Archaic hunter-gatherers lived at Canton periodically for about 300 years. The four-acre site served as a base camp. Tool production from start to finish was the main activity at this blufftop location.

Archaeologists have identified several contemporary base camps in the Western Pennyroyal Karst Area. Activities at these

sites were similar to those that took place at the Canton site. In contrast, a small cemetery was part of the base camp at the nearby Lawrence site in Trigg County, about 12 miles northeast of Canton.

Why Here?

The late Early Archaic hunter-gatherers who camped on the Canton blufftop knew that abundant and reliable natural resources were located nearby. This was especially true with respect to high-quality chert.



Above Near the center of the excavated area and along the rim of the sinkhole, archaeologists identified a cluster of drills (blue), scrapers (yellow), and retouched flakes (red).

Mississippian House

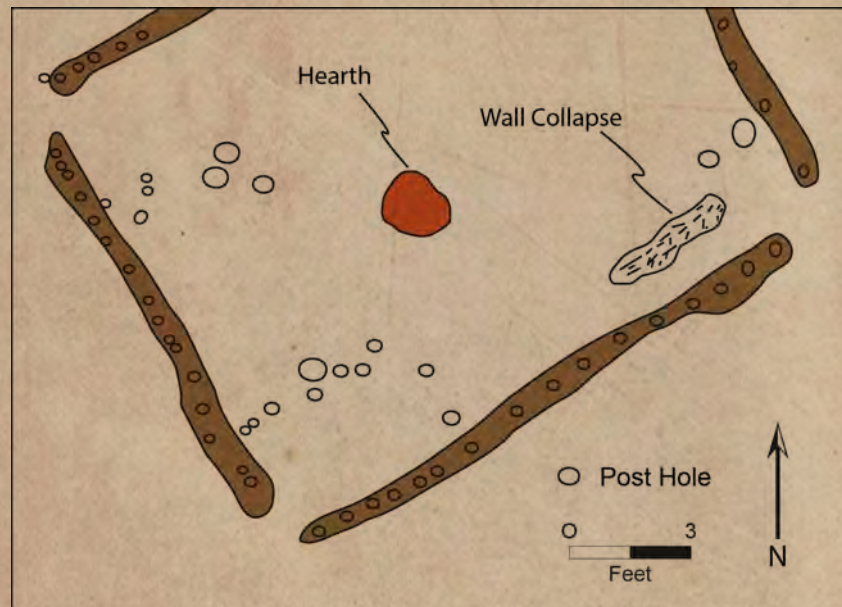
Following the 2006 demolition of the old Canton Baptist Church on Mound Road, the Kentucky Archaeological Survey spent four weeks excavating at the Canton site in 2007. Based on Rafinesque's 1833 map, investigators thought the church had been built on Mound 7, described by Rafinesque as a "small mound" (see map, page 2).

They were wrong.

The archaeologists discovered a small section of the ancient town's residential area preserved beneath the church, which had been built in the mid-1800s. They uncovered portions of several houses and a large refuse pit. In particular, their research documented a complete thirteenth-century *wattle and daub* house. Native farmers had built it in a shallow basin measuring about 12 by 14 feet. Inside the house, investigators found a central hearth, and post patterns suggesting the presence of benches or partitions in two corners.

How did the Native people build this house?

First, they dug out the house basin. Then, they dug narrow trenches along the basin's perimeter and set wooden posts down the center of each trench for the house walls. They filled the trenches with soil, packing it tightly around the posts to hold them securely in place. Next, they wove flexible branches and twigs between the posts (*wattle*) forming a lattice of branches. Finally, they covered the wattle with thick clay (*daub*) that baked hard in the sun. Now the builders could paint their house walls and decorate them with symbols. The roof was likely made from thatch – grasses collected from nearby meadows.



Left Map of the Mississippian period house documented at the Canton site in 2007. Note the central hearth, the wall trenches, and the locations where posts once stood - inside the wall trenches and inside the house at the corners.

Chert was available from outcrop exposures in the uplands and from along the base of the bluff where it met the floodplain (see sidebar on page 12). This fact likely influenced their decision to camp at this spot.

But chert was not the only reason. Three tributaries – Lick Creek, Hopson Creek, and Shacklin Creek – joined the Cumberland River south, north, and northwest of the base camp, respectively. The bluff provided easy access to the rich aquatic and terrestrial food resources of the Cumberland River and its tributaries and the floodplain. The forested uplands offered good hunting year-round and a variety of nutritious nuts, especially hickory nuts, in the fall.

The adjacent blufftop sinkhole offered additional advantages. Sinkholes are depressions in the ground that have no natural external surface drainage. When it rains, water stays inside them and typically drains slowly into the ground. During the late Early Archaic, the sinkhole may have held water. This would have made it an attractive place for animals (and for people, too). Wetland plants and animals that thrived in sinkholes, like pondweed and soft-shell turtles, provided other food resources.

Some American Indian groups today consider sinkholes avenues to the underworld and to earth deities. Early Archaic people also may have considered these karst features sacred places. Thus, ritual or spiritual factors may have been other reasons why these early hunter-gatherers chose to live in this place.

A Hunter-Gatherer Way of Life

Archaeologists draw on many different sources of information to give us a glimpse into the daily lives of the Canton site residents. These sources include the kinds of stone implements the people threw away or lost, the ways in which these items were distributed across their campsite, and information from contemporary Early Archaic sites in the Western Pennyroyal Karst Area. Descriptions of how modern hunter-gatherers live also serve as helpful analogues.

Like their ancestors, Early Archaic people spent most of the year in scat-



Above The atlatl is the first true weapon system humans invented and the one they used the longest. The Kentucky spearthrower was made of multiple parts. The throwing board was essentially a stick with a handle on the near end. It also consisted of a weight or *bannerstone* (to counterbalance the dart) and an antler or bone hook or socket on the far end. A 4 to 5-foot-long dart tipped with a stone point completed the weapon system.

tered small groups of extended families and relatives. The shelters they built were flimsy by our standards. Designed to last only a short time, they nevertheless would have protected families from rain, wind, and the cold. Daily activities included hunting animals, gathering plants, and visiting chert outcrops. Returning to camp, they processed animals into food, tools, and clothing; plants into food, dyes, and medicine; and chert into tools.

Groups scheduled their movements within home territories to take advantage of seasonal food resources. In the spring, they stayed near the river to fish during spawning season, and during the fall, they set up camp in the uplands to harvest nuts. Other camps were situated close to excellent sources of high-quality chert, critical for the production of stone tools.

Early Archaic hunter-gatherers stayed longer at places, like the Canton base camp, where they had access to a variety of resources. Living in such a rich natural environment, these people had plenty of leisure time.

Base camps were about more than natural resources, however. They were about families and friends as well. Base camps were places where related groups met to socialize. Families renewed old friendships and alliances, and forged new ones. They traded stories about hunting adventures, exchanged information, and met potential spouses. Parents taught children about their people's

history and beliefs. They described the habits of the animals and their homeland's natural resources – the locations of the best chert resources, the most productive nut trees, and the best fishing holes. Elders recounted stories of the ancestors and stories linking their people to the spiritual world; they oversaw rituals commemorating birth and coming of age, and ceremonies of healing and of death.

Although investigators did not encounter any graves at Canton, archaeologists have documented graves at contemporary Early Archaic base camps in the Western Pennyroyal Karst Area. At the Lawrence site, for example, archaeologists documented 12 Early Archaic graves. Most individuals were buried in a pit and in most cases, without non-perishable grave offerings. The exception at Lawrence (see sidebar on page 14) provides some of the best information about Early Archaic ritual life in western Kentucky.

Unexpected Discoveries

The 2014-2015 research at Canton added a new base camp to a growing list of Early Archaic sites in the Western Pennyroyal Karst Area. The discovery of new variants of Kirk spear points, however, was unexpected. The discovery that Early Archaic people living at nearby sites had made these point variants, too, was unexpected.

What did this mean?

Kirk Corner-Notched and Kirk Stemmed Spear Points

Kirk Corner-Notched and Kirk Stemmed points are common and widespread types of Early Archaic spear points. They range in length from 1.5 to 4 inches.

The blade of a standard Kirk Corner-Notched point is large and triangular, and it is sometimes serrated. Its expanding stem is broad, and primarily rounded, but shape of the bottom of the stem can vary. It can be straight, concave, or convex. Most specimens have barbs that extend downward from the notch. A Kirk Stemmed point has a long blade that often has deep serrations. Its straight stem is broad, and the bottom of the stem can be straight or slightly convex to concave. A Kirk Stemmed point is also corner-notched, but the notches are much broader than those on a Kirk Corner-Notched point.

Identifying New Variants

As analysis of the Canton spear points progressed, it became clear that many were subtly, but consistently, different from the norm. The ancient Canton flintknappers had fashioned shorter and narrower stems on their Kirk Stemmed points, and the notches they made were broader.

In addition, the Canton varieties also had longer blades. It appeared that, when

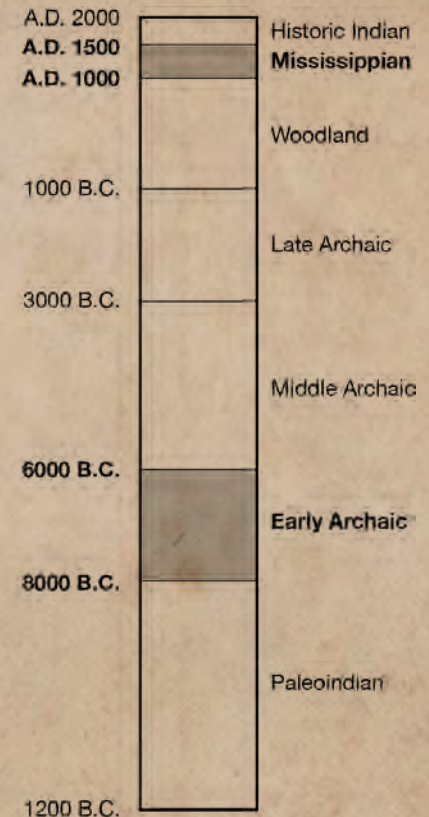
Figuring Out How Old

Archaeologists used absolute and relative dating methods to figure out when people camped at Canton.

Radiocarbon dating is the most common absolute dating method archaeologists use. It provides objective age estimates for materials such as wood, nutshell, or bone that were once part of living organisms. Plants and animals soak up radioactive carbon (C-14) throughout their lifetimes. When they die, it starts to decrease at a known rate. By measuring how much C-14 is left, archaeologists can determine the date of an organism's death, and thus indirectly, the age of a site.

Investigators submitted four samples of charred nutshell from Canton for radiocarbon dating. The dates showed that Native hunter-gatherers camped near the sinkhole over a relatively short period of time: between 6,550 and 6,250 B.C. (or roughly between 8,500 and 8,200 years ago).

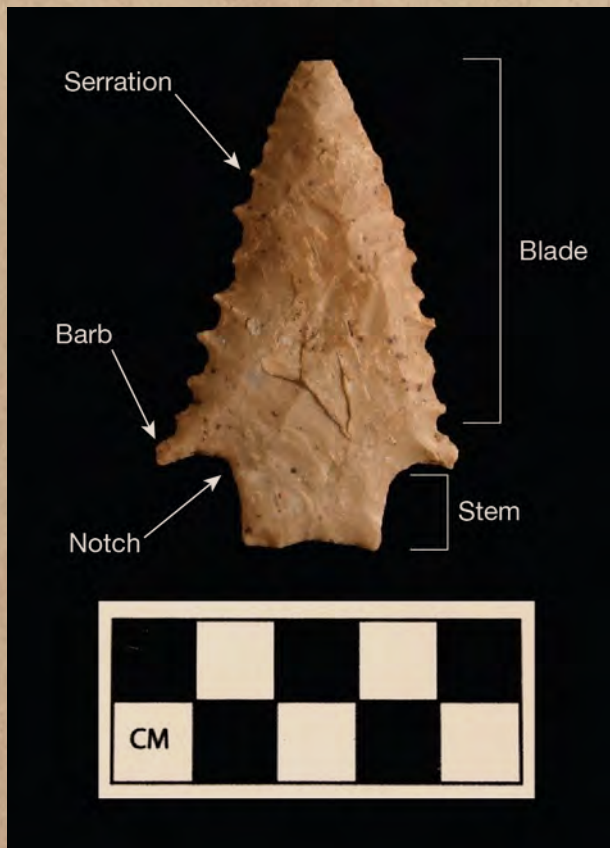
Relative dating methods required that researchers compare Canton's spear points to similar ones described and dated at other sites. Archaeologists have recovered Kirk Corner-Notched and Kirk Stemmed spear points from Early Archaic period sites all across Kentucky and throughout Eastern North America. Native peoples made these distinctive points primarily between 9,500 and 8,000 years ago. This information helped verify the Canton site's absolute dates.



Above Eras in Kentucky's Native American history, highlighting the periods of major Native occupation of the Canton site: the Early Archaic and the Mississippian.

Kirk Spear Points: Classics and Variants

Many of the Canton site's Kirk spear points exhibit all of the classic characteristics of Kirk points as defined by archaeologist Joffre Coe in 1964. He was the first to describe their overall length, blade length and thickness, stem width and length, serration presence/absence, and serration quality – whether coarse or fine. He based his descriptions on examples he recovered during his work at the Hardaway site in North Carolina. He named them for the family who owned the site.



Above Parts of a Kirk Stemmed spear point.

Right Examples of “classic” Kirk Corner-Notched and Kirk Stemmed spear points (left, of Fort Payne chert; right, of St. Louis chert). Note the large triangular blade and the expanding stem on the Kirk Corner-Notched specimen, and the deep serrations and wide straight stem of the Kirk Stemmed point. The barbs on these points are smaller than those on the spear point below left.



Right Examples of Kirk Stemmed variants. The difference is in the stem: it is shorter and narrower. Concave Stemmed (left, St. Louis chert) bases curve upward slightly toward the tip. Straight Stemmed (center, Fort Payne chert) bases are straight. Convex Stemmed (right, St. Louis chert) bases extend slightly downward and away from the tip. Click on the Concave Stemmed variant below to reveal a 3D image.



Chert Sources

Ancient Kentucky hunter-gatherers made tools out of chert or flint because, like glass, chert holds a sharp edge for a long time. In Kentucky, they could find chert nearly everywhere.

Chert occurs in limestone quarries or rock outcrops as nodules or as tabular beds or layers. Nodules can be quite large, but most range in size from a baseball to a basketball. Chert also occurs in river and stream beds where water has transported chert rocks from their original location. Not all limestone formations contain chert, though, and some contain much more than others. For example, chert can make up 50 percent of the Fort Payne Formation in some locations. This factor would have influenced hunter-gatherer chert selection decisions.

Researchers identified three types of chert in the area surrounding the Canton site: grey Fort Payne with its white mottles and streaks, light brown St. Louis, and grainy grey Warsaw. The Canton site flintknappers used mainly St. Louis and Fort Payne cherts.

Why did the ancient flintknappers choose St. Louis and Fort Payne? It came down to balancing quality with distance and accessibility.

St. Louis occurs within one-half mile of the site in almost every direction. Today, Fort Payne is located four miles north of the site, but given the quantities of it found at Canton, researchers think that a source of Fort Payne may have been located close to Canton during the late Early Archaic period. St. Louis and Fort Payne cherts also knap very well, and are of a much higher quality than the immediately available but low-quality Warsaw chert.



Left Examples of Kirk Stemmed Canton variants (Concave Stemmed Base) made from St. Louis chert (left) and from Fort Payne chert (right). St. Louis chert is light brown or tan in color. It occurs as round nodules in limestone. Fort Payne chert ranges in color from light to dark gray, and is mottled with white to light-blue and light-gray areas or streaks. It occurs as blocky fragments in limestone. Higher quality chert has a glassier surface and a smoother texture. Both St. Louis and Fort Payne chert are very smooth.

Click on the tool



Left Types of chert available in the area surrounding the Canton site. A chert type takes its name from the limestone bedrock formation of which it is a part. Thus, Fort Payne comes from the Fort Payne Formation (light blue), St. Louis is from the St. Louis Formation (green), and Warsaw (brown) is from the Warsaw Formation.





Above Ancient people made bannerstones in a variety of sizes, shapes, and styles. They used bone, antler, local and nonlocal stone, and marine shell. These bannerstones are made from granite (upper two) and from a composite (bottom) of both stone (red) and marine shell (white).

it came time to resharpen their points, the Canton flintknappers had attempted to maintain blade length. This may have increased the points' efficiency and use-life. Resharpening, while at the same time maintaining spear point blade length, is an uncommon tool-making approach in the Eastern Woodlands region of North America, where Kirk points occur. Most spear points, as with wooden pencils, become shorter as knappers resharpen them.

Exploring Comparisons

Convinced they had identified new Kirk point variants at Canton, researchers began asking more questions. Are

these variants unique to the Canton site, or did other Early Archaic peoples living in the Western Pennyroyal Karst Area also make and use spear points like these? And if they did, what does that imply?

Researchers discovered examples of the Canton variants at several sites located between 9.5 and 33 miles east, north, and northwest of Canton (see map, page 7). These sites shared more than a spear point style. Early Archaic people had lived at all of the sites repeatedly for extended periods of time. All were located near a water source: a river, a creek or a karst feature like a sinkhole, as at Canton, or a *karst window*, as at Lawrence. A karst window is a special type of sinkhole. It has a spring on one end where the water wells up, a surface-flowing stream across its bottom, and a swallow hole where the water returns underground.

What Could This Mean?

The manufacture of Kirk spear point variants around 8,500 years ago in this section of the Western Pennyroyal Karst Area could be related to several different cultural and technological factors. Here are two possibilities.

1) The Canton Kirk variants could represent a purely functional and technological innovation.

The purpose of a spear point is to perform a specific task or set of tasks. A change

in the length, width, and thickness of a point's stem or hafting area could mean that these western Kentucky flintknappers were designing their spear points to function differently than spear points had in the past.

Did shorter and narrower stems require users to haft the point more deeply into the spear shaft? If so, did this deeper hafting add strength, durability, and more stability to the point? Was a Kirk variant less prone to breaking when thrown using an atlatl? These adjustments also may help to explain these flintknappers' maintenance of longer blades. Points with longer blades could have inflicted more damage when penetrating an animal hide.

2) The Canton Kirk variants could symbolize membership in a larger social group in a wider region.

The Kirk variants made by late Early Archaic people living at Canton and at nearby Western Pennyroyal Karst Area sites may have communicated to outsiders – through the style and size of the spear points they made and used – that they were members of a regional group. The appearance of Kirk variants might mean that a change was beginning to take place in the way these spear point makers defined themselves socially. These points might indicate that more complex hunter-gatherer societies were beginning to develop in the region.

Archaeologists working in the lower Ohio

Valley have offered similar interpretations to explain regional differences in other types of artifacts. For example, late Middle Archaic (6,000-5,000 years ago) people carved bone pins with a wide variety of head shapes and styles. Some pin shafts also have elaborately carved and engraved geometric designs. These styles and designs could simply have been linked to pin function, which was to hold hair or clothing in place.

But symbolic or ritual or social meanings may have been linked to pin styles and designs. Pins may have identified the wearer as a member of a particular kin group or social group that was tied to distant individuals and groups through social networks. A shared pin style suggests that a greater degree of social interaction took place among group members. This was not necessarily face-to-face interaction on a daily basis, but the people considered themselves part of a regional social group, whose members could be counted on in times of need.

Another example is the regional differences in shape and raw material used in the manufacture of Middle Archaic (8,000 to 5,000 years ago) bannerstones. Simpler bannerstones would have worked just as well as decorative ones, yet some were very ornate, indicating that much time was spent in their manufacture. However, decorative examples may have held more symbolic meaning, or may have been a visible sign of a man's hunting or leadership skills, or an indication of the social groups to which he belonged.

Early Archaic Ritual

Late Early Archaic people had a dynamic belief system, ritual life, and burial ceremonialism. This is illustrated by the presence of a cemetery at the Lawrence site, and by one grave in particular.

Two young men between the ages of 22 and 28 had been buried side by side. Both lay in *flexed* or fetal position in a shallow pit. In life, they would have stood between 5 foot 2 and 5 foot 5. The non-perishable objects buried with them tell us something about their social position.

One of the men was buried with a toolkit of eight well-made but minimally or unused chipped stone tools made from St. Louis chert. Their presence indicates that the man's relatives intentionally placed the toolkit in his grave, perhaps intending it for his use in the afterlife. He could have used the items for a variety of cutting, sawing, piercing, and scraping tasks. Over the head of the other man mourners had sprinkled *red ochre*. Red ochre is iron oxide or hematite. In its pulverized form, people sometimes sprinkled red ochre on the body at burial as part of ritual.

Both men wore a string of at least 20 domesticated dog canine teeth and one beaver incisor around their neck. Dogs played a vital role in hunter-gatherer societies, serving as hunting companions and beasts of burden. Native people made pendants from dog teeth for millennia.



Left Native people often wore dog canine tooth necklaces. After drilling a hole in the tooth root with a stone drill, they would string the teeth together on a cord.



Above Examples of late Middle Archaic bone pins from the Black Earth site in southern Illinois, showing the diversity of head shapes: T-top, double-expanded, spade-top, fishtailed-cruciform, and straight/concave-top-expanding side. Two are engraved below the head.

Significantly, hunter-gatherers in the lower Ohio Valley made and used carved and engraved bone pins and ornate bannerstones thousands of years *after* people made Kirk variants. The existence of a regionally distinct late Early Archaic spear point style suggests that recognizable hunter-gatherer social and cultural identities may have emerged much earlier than researchers have previously thought.

Why Leave?

Around 8,500 years ago, when the hunter-gatherers started camping at Canton, the climate in western Kentucky was beginning to change.

Temperatures were rising. It rained and snowed less in the winter, and there were fewer springtime floods. Each year the Cumberland River valley experienced long dry spells. These changes occurred gradually, not all at once. Climatologists refer to this period as the *Hypsithermal Climatic Interval*.

The river, and plant and animal communities adapted to these changes. The Cumberland River may have become shallower. Drought-tolerant tree species, such as oak, hickory and chestnut, came to dominate the upland forests at the expense of trees that preferred a wet climate. As forest canopies opened up, grassland environments, including barrens and prairies, developed. These open areas enhanced upland soil erosion. This soil helped fill the

valleys, including the Cumberland River valley. Major streams developed meanders.

People adapted to these changes, too. They moved less often and within smaller territories. Some archaeologists have suggested that, even though upland resources remained an important source of animal and plant foods, people began to live for longer periods of the year in the river valleys.

These changes may have made the Canton bluff less attractive to hunter-gatherer groups. With higher temperatures and reduced rainfall, the sinkhole may have dried up. It no longer would have been a source of fresh water and wetland plants and animals. Because of increased erosion, redeposited soils could have covered previously accessible nearby chert sources, which had also made the Canton bluff so attractive.

Residents may have over-exploited nearby nut sources. Maybe a catastrophic natural event damaged the site setting. A particularly divisive social or political encounter could have led groups to steer clear of the Canton locality. Any or all of these natural and cultural factors could have made this blufftop location less desirable. Whatever the factors, around 8,200 years ago, hunter-gatherers stopped using the Canton bluff as a base camp.

Evidence shows that, for the next 7,000 years, Native groups occasionally stopped briefly to camp at this spot. None of these groups used the locale like the late Early Archaic hunter-gatherers did. Intensive use

of the Canton blufftop did not start up again until around A.D. 1150, when Native farmers established the town and mound center that Rafinesque would describe in 1833.

Today

Today, the small community of Canton overlooks Lake Barkley. Its economic base is tied to lake recreation and tourism. As of this writing (July 2018), a new bridge crosses the lake south of town. Open for five months, it will eventually carry eastbound traffic only. A wider section of U.S. Highway 68/Kentucky Highway 80 leads to it from the east.

On April 11, 2018, the old bridge was demolished. KYTC anticipates that the westbound bridge will be open to traffic later in 2018. Construction of a pull-off for the highway sign on the south side of the road, not far from that bridge – the reason for the 2014-2015 archaeological excavations – is still planned.

As you drive over Lake Barkley on the sparkling new bridges, stop at the pull-off and take a look at the sign. Read about the farmers who once lived on this blufftop.

But as you do, remember also the people who lived there first: late Early Archaic hunter-gatherers. Thousands and thousands of years ago, they passed this way, too. Camping between the steep river bluff and the edge of a deep sinkhole, they made variants of Kirk spear points and left behind for us to consider, the symbols of who they were.



Above A Native artist made this engraved bone pin from a section of the longer front leg bone of a white-tailed deer. Using a sandstone abrader and a little water, the pin maker would have worked the head into the desired shape. He or she used a stone drill to make the hole below the head. Finally, with a sharp flake, the artist engraved the band and multiple stripes into the pin shaft.



Above Artist's rendering of the new bridge at sunset.

To Learn More About Western Kentucky Archaeology

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To Learn More About Flintknapping and Chert

Read Noel D. Justice (1987), *Stone Age Spear And Arrow Points of the Midcontinental and Eastern United States: A Modern Survey and Reference*, published by Indiana University Press, Bloomington.

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A Thriving Native American Village

One thousand years ago, this was a busy village with several hundred residents. Archaeologists call the prehistoric people who lived here Mississippians, and they call this the Canton site. Mississippian people were farmers, growing corn and squash in the river bottoms. They were also traders, exchanging goods with distant communities through complex trade networks.

Villages like the Canton site were the center of Mississippian life. People lived in permanent houses with outdoor work spaces. They gathered in the central plaza, and buried their dead in cemeteries. Their leaders lived on large platform mounds, where they also performed important ceremonies and rituals. People living nearby traveled to Canton to take part in those ceremonies and to socialize.

A piece of a ceramic vessel (a potsherd) recovered from the house floor. The design is similar to those found at other Mississippian sites. It shows that the people living here had contact with others in this region.

A map of the Canton site drawn Constance S. Rafinesque, a French naturalist who visited the site in 1833.

A MISSISSIPPIAN HOUSE

Among the important finds here was evidence of a Mississippian house. Native builders constructed the house in a shallow basin dug about one foot below the surface of the ground, setting small posts in trenches on each side. The builders bent and lashed together the upper portions of the posts to form the roof. They covered the walls with thick clay and covered the roof with thatch. The finished house had a central hearth, benches in two corners and a floor of hard-packed yellow clay.

An archaeologist with the Kentucky Archaeological Survey examines the central hearth of a structure. Note the fire-reddened soil.

Evidence of a Mississippian house: The circular stains indicate a line of posts. The linear stain is evidence of the trench into which the posts were set.

A reconstructed Mississippian house in the visitor center at Cahokia Mounds State Historic Site, Collinsville, Illinois

Photograph of artifact and soil excavation. Courtesy of University of Tennessee. © 2018. Inquiries of archaeological artifacts by Raymond W. Gentry, an archaeologist at the University of Tennessee. Archaeology in Kentucky. The Upper Cumberland & Reference to Description from Vols. 1-100. Occasional for the Middle Cumberland. Bulletin de la Société de Géographie, Volume 20, 1833.

Above The road sign that started it all. This panel describing the archaeology of the Canton site and the Native farmers who once lived on the bluff will be featured in the road pull-off located where the 2011-2015 investigations took place.

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