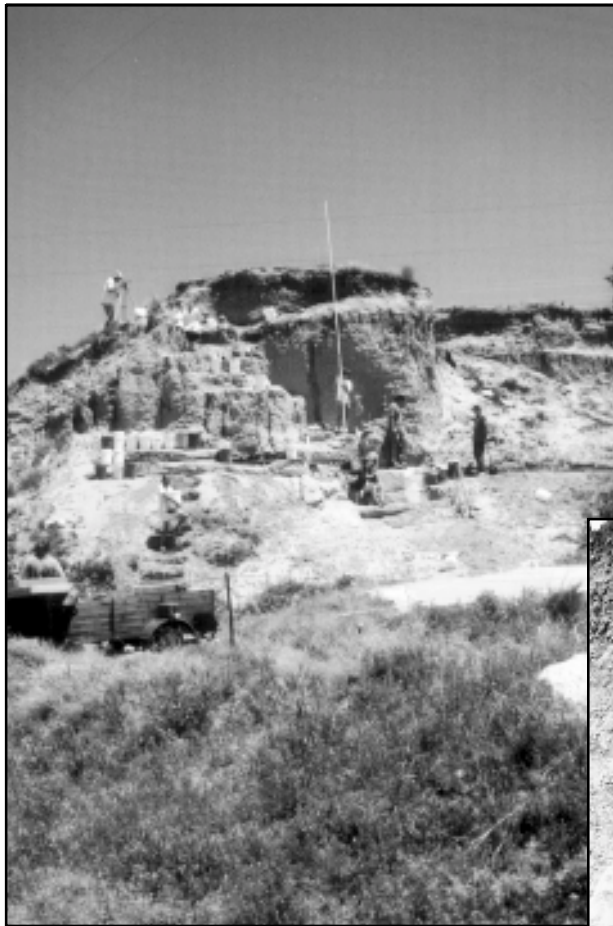
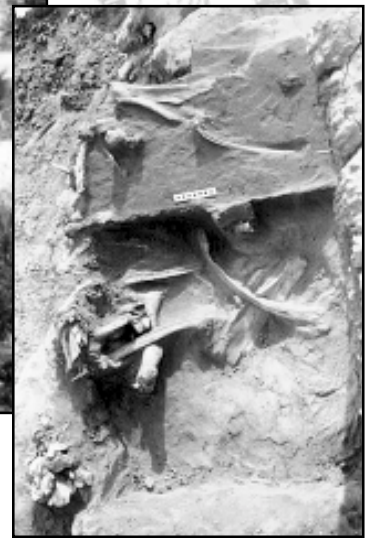


# Norton Bone Bed Reveals Wealth of Insights & Bison Remains



*The KU field crew is challenged by the rugged terrain and complex nature of bone bed excavations at the Norton Bone Bed site in 1993.*



**W**hy dig up bison bones? Why isn't one comparative bison skeleton enough? What can we learn about prehistoric people from studying bison bones? Why study modern bison carcasses? What is taphonomy anyway?

University of Kansas (KU) students have been considering the answers to such questions during field work in western Kansas, the Texas Panhandle, and western Oklahoma, starting in 1992 and continuing to the present. One of the sites under investigation is the Norton Bone Bed (14SC6) near Scott City, Kansas, which is featured in the Kansas Archeology Week poster and brochure. This site is of late Paleoindian age and dates to about 9,000 years ago. It is the

first Paleoindian bison kill/butchery site to be investigated in western Kansas since the 12 Mile Creek site in Logan County was studied in 1895.

Excavations at the Norton Bone Bed began in May 1992. The site came to my attention through the efforts of Charlie Norton of Leoti, who recognized its significance and was instrumental in making research there possible.

The bone bed was first exposed in the mid-1970s as a result of sand and gravel quarry operations. How much of the bone bed was lost due to quarry activity and subsequent erosion is unknown, but present evidence indicates that the deposit is extensive, covering an area of at least 10 x 22 meters (33 x 72 feet). The bones occur at the base and in the fill of an ancient gully. There is a good possibility that a camp or processing area occurs on a margin of the gully.

A concentration of bison bones was exposed in the walls of the quarry at depths from 1 to 3.5 meters (3.3 to 11.5 feet) below the original surface, but spoil dirt had been deposited on top of the area.

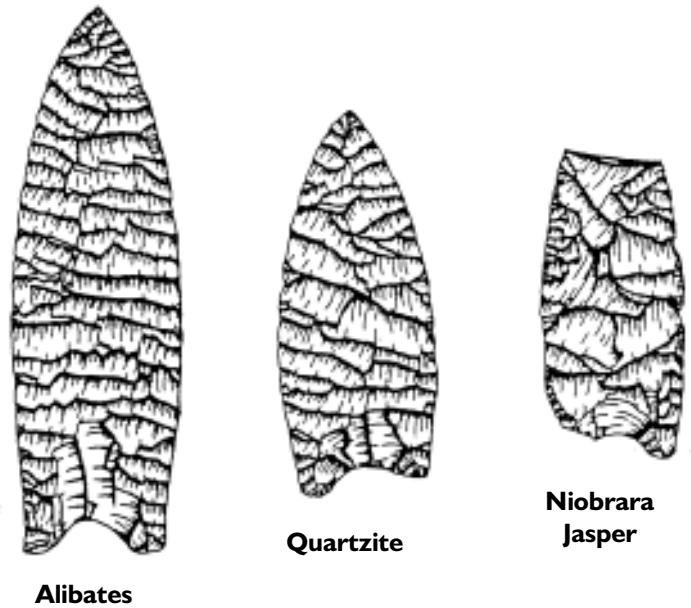
The work of the KU students included the removal of this spoil dirt and the partial excavation of about 15, 1-meter squares. The excavation had to be stepped down to allow access to the deepest part of the bone bed.

More than 1,600 bison bones were mapped and recorded in place, including information on side up, orientation, dip, and condition of pieces. This information helps interpret the site's complex formation history, including periods of weathering, movement, and reburial. The minimum number of bison represented is eight, although the final number of individuals is expected to increase significantly. Very few intact teeth of young individuals have been recovered, and no seasonal estimate from eruption and wear has been made. In addition to bison, at least one antelope was represented in the bone bed.

Diagnostic stone artifacts include a complete quartzite lanceolate (leaf-shaped) point with oblique parallel flaking, a concave base, and a reworked blade, giving it a stemmed appearance.

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*This article was contributed by Jack L. Hofman, professor of anthropology, University of Kansas. Professor Hofman conducts archeological fieldwork in western Kansas, Oklahoma, and Texas with an emphasis on the investigation of Paleoindian life ways.*



(Left) KU students water screen matrix from the Norton Bone Bed deposit to recover small bone fragments and stone flakes.  
 (Above) Drawings of Late Paleindian projectile points recovered from 14SC6.

The specimen shares attributes with both the Allen and Dalton projectile point types, characteristic of the late Paleindian or early Archaic period. A square-stemmed point base with ground edges from another late Paleindian complex type (Cody) was also recovered. Whether these specimens reflect one or multiple episodes of site utilization remains to be determined.

Other stone artifacts include two small fragments of spear points, two scrapers, a flake knife, a small flake tool, and several hundred flakes, mostly from maintenance and resharpening of tools. The lithic materials used represent sources from western Kansas, eastern Colorado, central Texas, and perhaps other areas. While most of the flakes are local Niobrara jasper, the projectile points and other tools are made of more exotic materials.

Soil samples were collected and used to date the soil that formed over the gully and bone bed. The age of this soil provided a minimum age for the filling of the gully and so for the bone bed buried in the gully floor: 1,760 +/- 60 before present (B.P.). The single radiocarbon age on collagen from a bison leg bone yielded an age of 9,080 +/- 60 years B.P.

Details of how the animals were killed remain obscure. It is possible that the animals were cornered at the head of this deep, steep-walled arroyo or that they

were herded into it from above. The variable weathering on bone surfaces, the presence of articulated skeletal units on the gully slope, and the differentially weathered and mostly disarticulated bones at the base of the gully provide some important clues. Documenting the history of weathering and movement of the skeletal remains will enable us to outline some of the events that occurred,

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perhaps to define areas where the kill and butchering took place, and assess how the bone deposit has been modified by natural factors. Although we are confident that people were involved in the killing and butchering of these bison, the details remain to be determined.

There is little or nothing about the archeological record of western Kansas

or elsewhere that is “self-evident.” In order to accurately interpret the bones, stones, charcoal, and other materials from these sites, we must develop our analytical skills and tools. Bison bone bed research has advanced significantly during the past 30 years, including the development of taphonomic analysis.

Taphonomy is the study of the processes affecting the carcasses and bones between the time of death and preservation. Many human and non-human factors modify carcasses and bones after a kill, and each factor leaves additional and specific kinds of information that can help us explain and interpret what has happened since the bison were killed.

When working with prehistoric bison bones, it is critical that we do more than simply identify the bones as to species and element. The bones can inform us about the size of herds, the sex and age composition, the season of a death or kill event, the processes that have influenced preservation and modification of the bones, and bison evolution and ecology. The way bison carcasses are utilized, the portions butchered or removed, the time of year, and the intensity of processing all provide information about the way human groups were organized, their economic status, and their mobility or movement patterns.

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## Board Approves Seven Nominations

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Built in 1929 at a time of countywide prosperity, the courthouse epitomized the pride and confidence of the local citizens.

The John Wright House, constructed in 1887 at 322 W. Marlin in McPherson, was nominated for its associations with John R. Wright, local entrepreneur and officeholder, and for its architectural significance as an example of the Queen Anne style.

The Devon Apartments at 800-808 Southwest 12<sup>th</sup> Street in Topeka was nominated for its association with the growth and development of Topeka. It is a unique example of a late 19<sup>th</sup> and early 20<sup>th</sup> century apartment complex that incorporates commercial and residential units. Originally constructed in 1887 and substantially remodeled in 1906, the brick building faces south across 12<sup>th</sup> Street to Holliday Park.

The review board will next meet at 9 a.m. on Saturday, February 23, 2002, in the Sheffel Room at the Topeka-Shawnee County Public Library, 1515 SW 10<sup>th</sup> Street, Topeka. For information regarding that meeting and its agenda, interested individuals may call (785) 272-8681 Ext. 240.

## Preservation Week 2002 Posters, Ideas Now Available

“The Spirit of Place” will be the theme for Preservation Week 2002, May 12-18. To receive the 2002 poster, contact the National Trust for Historic Preservation at (202) 588-6037.

For tips on planning and promoting Preservation Week activities in your community, visit the National Trust’s website: [www.nationaltrust.org/preservationweek](http://www.nationaltrust.org/preservationweek).

## Preservation Leadership Training

Preservation Leadership Training (PLT) is an intensive one-week experience tailored to the needs of state and local preservation organizations. PLT provides participatory learning experiences in leadership and organizational development techniques; stimulating educational sessions; and up-to-the-minute information on current preservation practices, issues, and action strategies.

The 2002 PLT is scheduled for Marshall, California, June 22-29. The application deadline is April 19, 2002. This training opportunity is designed for board members and staff of preservation

organizations and agencies and others who are in positions to influence preservation efforts in their communities.

For more information, contact the National Trust for Historic Preservation at (202) 588-6067 or [plt@nthp.org](mailto:plt@nthp.org).

## Dodge City Granted CLG Status

Dodge City was recently accepted by the National Park Service as the newest Certified Local Government (CLG) in the state. As such, it joins Doniphan County and the cities of Abilene, Hutchinson, Kansas City, Lawrence, Leavenworth, Newton and North Newton, Salina, and Wichita.

To qualify for the program, a local government must enact an historic preservation ordinance and establish a qualified historic resources commission. Certification by the National Park Service helps foster preservation within local communities by involving their governments in activities such as approval of nominations to the National Register of Historic Places and design review. No less than ten percent of the allocation provided to the state by the Historic Preservation Fund must be passed to CLGs.

Contact the Historic Preservation Office at (785) 272-8681 Ext. 240 for more information.

## Norton Bone Bed

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Archeologists have learned how to ascertain the season, usually to within a few weeks, of the time that a kill was made. This is done through study of the eruption and wear on teeth using control samples of known-age animals. Determining the number of animals and the composition of the herd (number of cows, calves, and bulls) is important because bison have variable economic potential by sex and age during different seasons.

Generally age can be estimated by examining the size of elements and their age, based on fusion of epiphyses (growth centers of bones). Mature male bison are significantly larger than females of the species. Also, the condition of both males and females changes dramatically during the year. In terms of fat and marrow quality, bulls are in relatively better condition during the late winter and spring, while cows tend to be in better shape in the early fall. Most adult bulls do not stay with the cow-calf herds all year, so composition and size of the herd at the time of the kill will influence the available resources and what butchering strategies will be used.

In conjunction with information on tool functions, lithic material sources, and stratigraphy, it is sometimes

possible to learn much about what happened in particular places in prehistory. Perhaps more importantly, however, we can gain insights into how these particular places fit into regional frameworks of prehistoric adaptations and evolutionary change of human systems and environments. To use information from bison bone beds effectively, it is critical that we have a wide range of controlled information on bison weathering and natural dispersal agents. We must not only distinguish between natural (carnivore gnawing, water transport, down-slope movements, and deterioration) and cultural (dismemberment of the carcasses, cut marks, and hammerstone impacts) modification of bones, but also determine the degree of weathering, the type of modification, and the number and sequence of agents involved.

These concerns form the basis for a continuing taphonomic research effort at several western Kansas locations. In this setting, it will be possible to monitor the natural weathering and dispersal of bison skeletons over a period of years. This task will provide a library of information, which, when used in conjunction with controlled experiments and archeological samples, will help us refine our approaches to interpreting the archeological record and develop better explanations for what happened in prehistory.