University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Transactions of the Nebraska Academy of Sciences and Affiliated Societies

Nebraska Academy of Sciences

1-1-1986

Possible Evidence for a Pre-Clovis Bone-Tool Industry from the Central Plains

Thomas P. Myers
University of Nebraska State Museum

Richard G. Corner
University of Nebraska State Museum, rcorner1@unl.edu

Follow this and additional works at: http://digitalcommons.unl.edu/tnas

Part of the Life Sciences Commons

Myers, Thomas P. and Corner, Richard G., "Possible Evidence for a Pre-Clovis Bone-Tool Industry from the Central Plains" (1986). *Transactions of the Nebraska Academy of Sciences and Affiliated Societies.* Paper 214.
http://digitalcommons.unl.edu/tnas/214

This Article is brought to you for free and open access by the Nebraska Academy of Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Transactions of the Nebraska Academy of Sciences and Affiliated Societies by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

1986. *Transactions of the Nebraska Academy of Sciences*, XIV: 41-45.

POSSIBLE EVIDENCE FOR A PRE-CLOVIS BONE-TOOL INDUSTRY FROM THE CENTRAL PLAINS

Thomas P. Myers and R. George Corner

University of Nebraska State Museum
University of Nebraska
Lincoln, Nebraska 68588-0514

Fossil bones from fluvial deposits in the Yukon have been interpreted as evidence of an early human occupation. In this paper we are reporting similar materials from Late Pleistocene fluvial deposits in southwestern Nebraska which may be pre-Clovis in age. In spite of their morphological similarity to Old Crow specimens, we are reluctant to interpret them as evidence of a pre-Clovis occupation. Nevertheless, we are documenting these specimens for the information of other scientists who may be concerned with this problem.

† † †

INTRODUCTION

Evidence for a pre-Clovis occupation of the Great Plains south of the glacial ice will be difficult to obtain because of the geomorphology of the region. Most examples of Late Pleistocene macrofauna have been found as isolated specimens from the Wisconsin loesses. Caves, sinkholes, bogs, and natural traps have produced large Late Pleistocene faunas throughout North America, but not in the Central Great Plains. Though a few fluvial localities in Nebraska have yielded substantial Late Pleistocene faunal assemblages (e.g., Corner, 1982; Voorhies and Corner, 1984), some Late Pleistocene alluvial sediments lie beneath the modern floodplains.

Fossil beds in such floodplain situations are sometimes tapped by wet-gravel pits from which sands and gravels are hydraulically mined from as much as 60 ft (18.3 m) beneath the surface. Fossils obtained from such pits are probably derived from the sediments of several depositional cycles, and they at least can be used to obtain maximum relative ages for the faunas even though individual specimens cannot be placed within a precise stratigraphic framework. Thus, evidence from these pits is a useful supplement to the relatively meager record available in surface-accessible deposits. It is not uncommon for the wet-gravel pits to produce stone artifacts in addition to the fossil bones of modern and extinct animals (Myers, 1977).

We have already expressed our doubts about interpreting fractured bones from such fluvial localities as the products of human workmanship because of their morphological similarity to much older assemblages (Myers, Voorhies, and Corner, 1980). Nevertheless, continued collection of fossil materials from the Red Willow gravel pits (Corner, 1977) in southwestern Nebraska (Fig. 1) has produced specimens which may be the products of human workmanship according to the criteria of Bonnichsen (1979) and Morlan (1980). At the very least, these specimens have undergone modifications which are difficult to account for except by a series of unusual taphonomic events. The object of this paper is to bring several of these specimens to the attention of other scientists concerned with possible bone tools and the pre-Clovis occupation of the Plains.

DESCRIPTION OF THE POSSIBLE ARTIFACTS

UNSM 48,784 is a right basal portion of a naturally-shed caribou antler (*Rangifer tarandus*) from 25 Rw-108 (wet-gravel pit of Missouri Valley Construction Company, 6 mi [9.7 km]

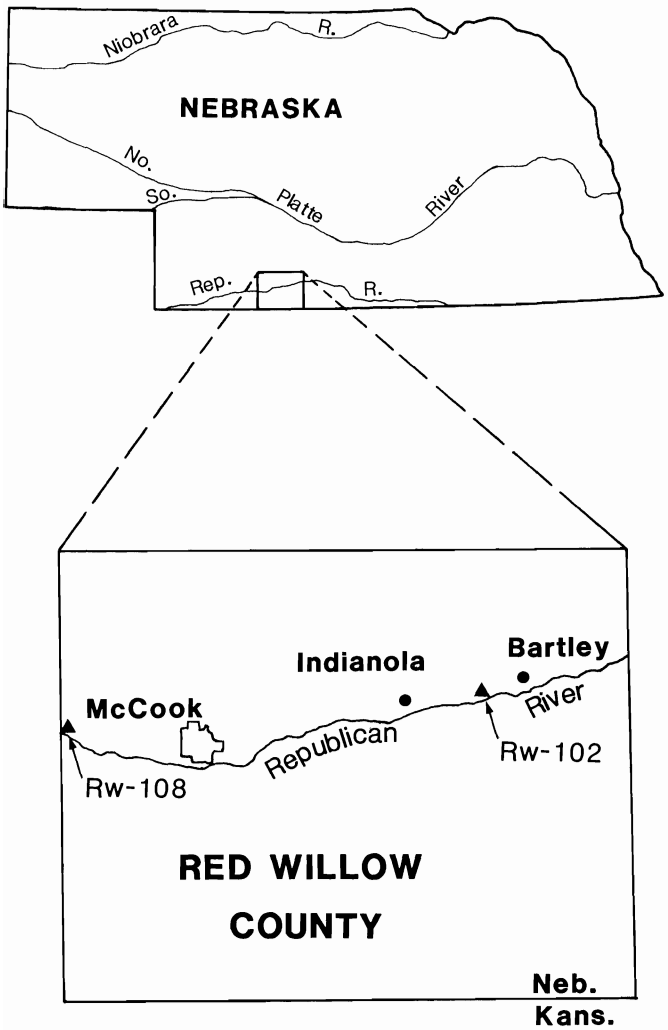

FIGURE 1. Location of University of Nebraska State Museum collecting sites in southwestern Nebraska that have produced possible bone-tools.

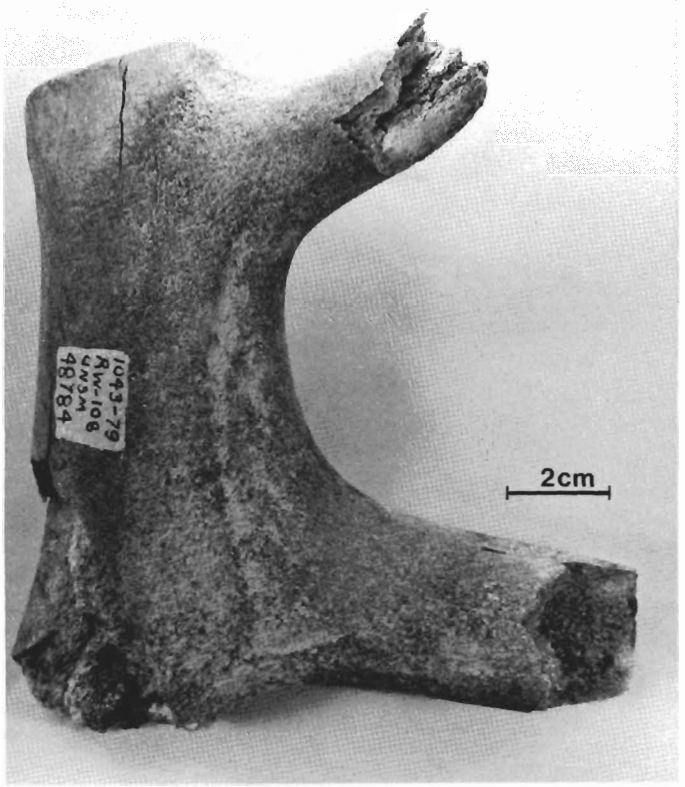

FIGURE 2. Basal portion of caribou antler (UNSM 48,784) with a polished and faceted area at the base.

west of McCook, Red Willow County, Nebraska). This species probably left the area at least 500 to 1,000 yr before Clovis times. The specimen is broken off just above the base of the bez-tine and with only the bases of the brow- and the bez-tines present (Fig. 2). The breaks on the beam and the tines were probably made during transport through mining apparatus. The medial basal portion of this specimen exhibits a faceted, polished area of roughly triangular shape whose maximum dimensions are 33 mm across the base by 23.5 mm at right angles to the base. The polish continues for a distance of 32 mm above the apex of the faceted area. The juncture between the faceted area and the base of the antler is slightly rounded. The polished, faceted area bears a number of faint striations, some of which are almost parallel to the base while others are at an angle of approximately 50°. That is, the striations cross-cut one another (Fig. 3).

The partial right antler (UNSM 46,302) from 25 Rw-102 (wet-gravel pit of Davidson Sand and Gravel, 1 mi [1.6 km] west of Bartley, Red Williow County, Nebraska) consists of the basal portion with the brow-tine broken out, the base of the bez-tine and the first posterior-tine (Corner, 1977: Fig. 2D). The beam is broken below the second posterior-tine at a point where the cross-section of the beam is beginning to flatten. The brow-tine was apparently broken out prior to burial by force from below while the bone was still green. The medial basal portion of this specimen has a semi-circular faceted and polished zone which measures 22.5 mm across the base and 13 mm high (Fig. 4). Above this is a roughened area which extends 29 mm above the base of the antler. Both zones are adjacent to the scar left by the removal of the brow-tine. The faceted, polished area is marred by striations at a 15° angle to the bse of the tine (Fig. 5). These are somewhat deeper and broader than those of the first specimen.

UNSM 49,978 is the distal one-third of the left femur of *Camelops hesternus* from 25 Rw-102. This species survived as recently as 10,000 yr ago, and a few examples have been

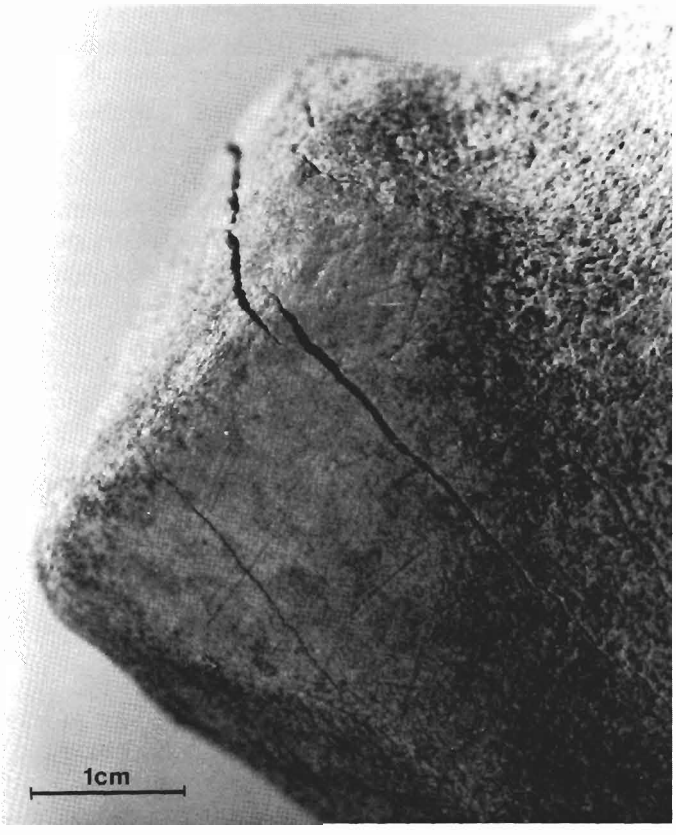

FIGURE 3. Close-up of polished and faceted area of UNSM 48,784 showing cross-cutting striations.

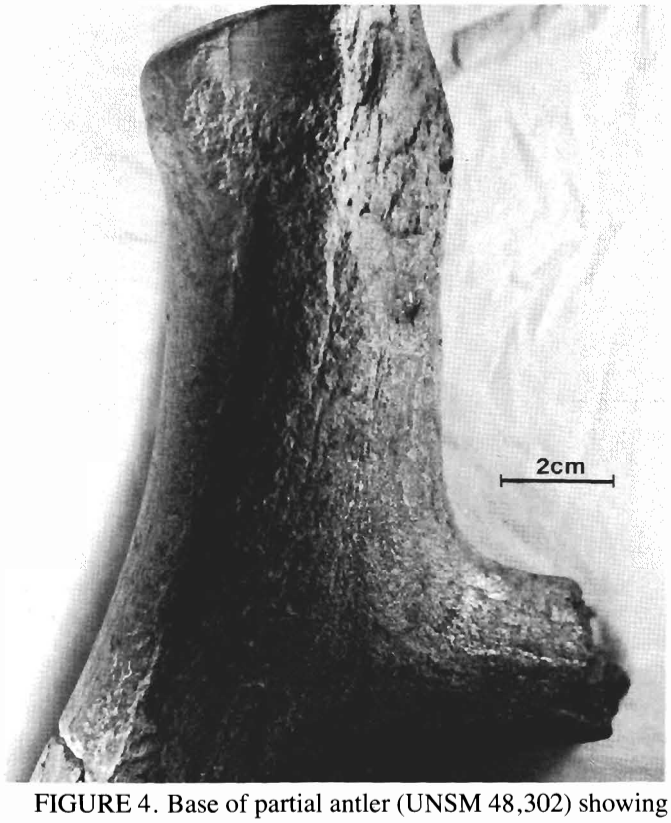

FIGURE 4. Base of partial antler (UNSM 48,302) showing polished and faceted area.

FIGURE 5. Close-up of polished and faceted area of UNSM 46,302 showing parallel striations.

reported from archaeological sites attributable to the Clovis, Folsom and Hell Gap periods (Frison *et al.*, 1978). UNSM 49,978 appears to have been broken by at least two blows, one each to opposite sides of the shaft at approximately 45° angles to the anterior-posterior axis while the bone was still fresh. The resulting spiral fractures descend the bone and terminate almost opposite one another, leaving lateral points at the intersection of the fractures. The concavity of the most anterior spiral fracture is virtually unmodified except by normal wear. The posterior concavity is polished across the green-bone break and exhibits at least three facies (Fig. 6). This polished area exhibits fewer striations than the rest of the area close to the break. The striations which do exist are approximately perpendicular to the long axis of the bone. This polished area extends up to and across one of the lateral points formed by the intersection of the spiral fractures. Striations on this polished area are also perpendicular to the longitudinal axis of the bone, and this pattern of striations extends down the shaft well past the polished area.

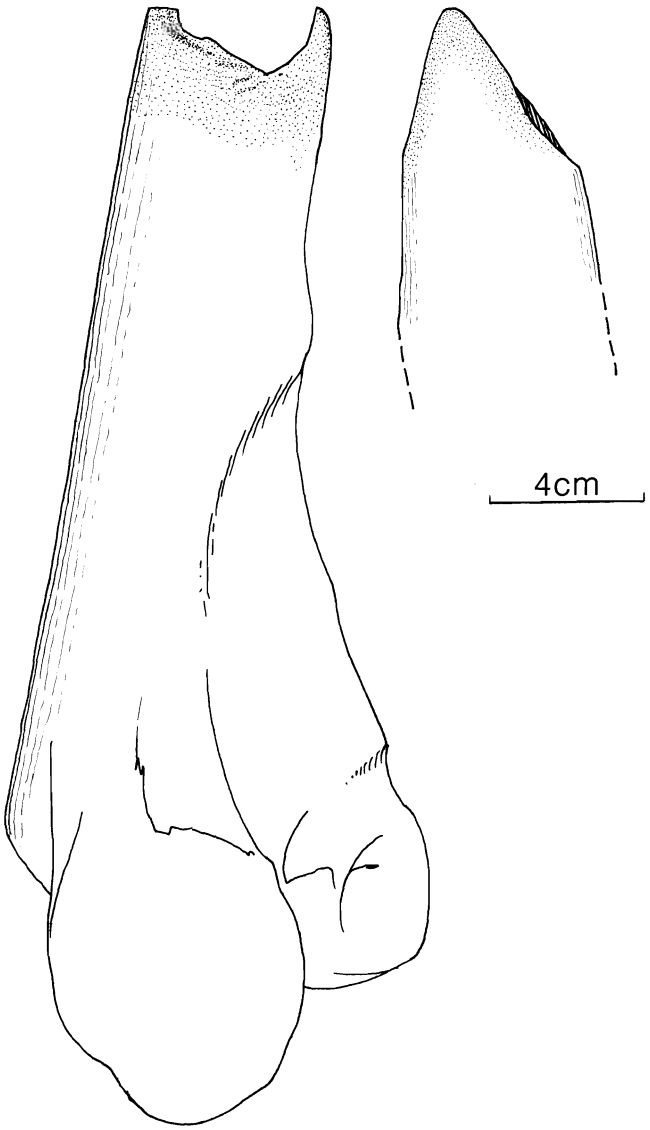

FIGURE 6. Distal one-third of camel (*Camelops hesternus*) femur —UNSM 49,978, showing spiral fractures and areas of polish and wear.

COMPARATIVE MATERIALS

The burden of proof rests with those who wish to claim that particular broken bones are tools. As we have noted elsewhere (Myers, Voorhies, and Corner, 1980), intersecting spiral fractures and even impact fractures do not necessarily reflect human intervention in the paleontological record. However, in that paper we also noted that restricted areas of polish or wear are not often found in paleontological materials prior to the presence of humans. In this case, we have two caribou antlers which exhibit very similar wear patterns. We think that it is extremely unlikely that taphonomic forces would have produced such similar patterns of restricted wear on two specimens.

It seemed possible that the living caribou might have damaged their antlers in a fashion similar to that of the paleontological specimens. We have eight modern caribou antler racks with skulls in the museum collections. None of them exhibits the slightest trace of wear similar to that of the possible artifacts described in this paper. However, none of our comparative sample from modern animals was naturally shed. Seven fossil caribou antlers in the paleontological collections of the University of Nebraska State Museum were also examined for possible human modification. This review of paleontological caribou antlers clearly shows that short transverse grooves are not found commonly on the medial side of naturally shed caribou antlers from the Late Pleistocene on the Central Plains. In only one case is there a slight flattening on the medial side of the antler near its base. The wear patterns on the two antlers that we have identified as possible artifacts are different from the wear patterns on other naturally shed paleontological specimens.

We also found that faceted surfaces appear on just 15 of several hundred long bones mined at wet-gravel pits. In most cases, a break in the patina suggests that the faceting took place long after the animals had died. In a smaller number of cases, we found that slight faceting did not break through the patina, but this faceting is substantially less than that found on the possible caribou antler artifacts. On one deeply grooved bone in which the groove had broken through the patina, we found shallow parallel grooves similar to those found on one of the possible caribou antler artifacts (UNSM 46,302). However, none of the faceted surfaces exhibited cross striations similar to those found on the other possible caribou antler artifact (UNSM 48,784).

The *Camelops* bone described in this paper is less difficult to accept as an artifact because of the known association of *Camelops* with humans at stratified archeological sites. The polish on this specimen is analogous with the polish on chopping tools made from bison bones at the Casper Site, a Hell Gap Period site in eastern Wyoming (Frison, 1974), but the striations cross-cutting the axis of the bone *are not* compatible with the apparent use of the bison bone choppers at the Casper Site which should have resulted in striations parallel to the axis of the bone.

CONCLUSION

We would have little difficulty in accepting the specimens described here as bone tools if they had been found in an unequivocal and archaeological context. They were not. Further, to the best of our knowledge, such artifacts have never been found in an archaeological site. In the absence of such associations, the interpretation of these specimens must be made upon purely morphological grounds. While we are sym-

pathetic with Morlan's efforts to define such morphological parameters (Morlan, 1980), we remain unconvinced. Any of the specimens in Morlan's sample might have been a tool because of the age of the sample with which he was dealing. His problem was to sort the tools from the non-tools. In our view, the definition of natural taphonomic results should be made upon an assemblage of such antiquity that none of the specimens under analysis could have been a tool. Even then, we could not be certain that we had defined the full range of taphonomic morphologies unless several successive studies had failed to result in the identification of new categories of variation.

Though we are sympathetic to the concept of bone tools providing evidence for a pre-Clovis occupation of the Plains, we are unable to accept these promising specimens as proof that there really was such an occupation. Nevertheless, we shall continue to examine Late Pleistocene faunal localities and assemblages for such unequivocal evidence.

ACKNOWLEDGMENTS

Fossil materials from gravel pits could not be collected without the active cooperation of the pit owners and operators. Special thanks are expressed to Lee Davidson of Bartley, Nebraska, and the Missouri Valley Construction Company. We are also indebted to many scientists who have examined and discussed the specimens reported here. We appreciate the contributions of Mark Marcuson for his illustrations and of Gail Littrell for the preparation of the manuscript.

REFERENCES

Bonnichsen, R. 1979. Pleistocene bone technology in the Beringian Refugium. *National Museum of Man, Mercury Series, Archaeological Survey of Canada,* 89: 1-296.

Corner, R. G. 1977. A Late Pleistocene-Holocene vertebrate fauna from Red Willow County, Nebraska. *Transactions of the Nebraska Academy of Sciences,* 4: 77-93.

_____. 1982. A Late Pleistocene fauna from Litchfield, Sherman County, Nebraska. *Proceedings of the Nebraska Academy of Sciences,* 92nd Annual Meeting: 46.

Frison, G. C. (editor). 1974. *The Casper Site, a Hell Gap bison kill on the High Plains.* New York, Academic Press: 266 p.

_____, D. N. Walker, S. D. Webb, and G. M. Zeimens. 1978. Paleo-Indian procurement of *Camelops* on the Northwestern Plains. *Quaternary Research,* 10(3): 385-400.

Morlan, R. E. 1980. Taphonomy and archaeology in the Upper Pleistocene of the northern Yukon Territory: a glimpse of the peopling of the New World. *National Museum of Man, Mercury Series, Archaeological Survey of Canada,* 94: 380 p.

Myers, T. P. 1977. Man-made artifacts from the Red Willow gravel pits. *Transactons of the Nebraska Academy of Sciences,* 4: 9-12.

_____, M. R. Voorhies, and R. G. Corner. 1980. Spiral fractures and bone pseudo-tools at paleontological sites. *American Antiquity,* 45(3): 483-490.

Voorhies, M. R., and R. G. Corner. 1984. The Crappie Hole Site: a concentration of spirally-fractured Rancholabrean mammal bones in western Nebraska. *Current Research,* 1: 53-54.