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ARCHAEOLOGICAL RESEARCH AT THE HUTTON-PINKHAM SITE, EASTERN COLORADO

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ABSTRACT

The Hutton-Pinkham site, originally excavated in 1977, contains Late Pleistocene fauna (possibly associated with chipped stone artifacts), an Archaic horizon, and at least one archeological horizon between these two occupations. Preliminary analysis of the material recovered and contextual data on palynology, geomorphology, and geology collected during the 1988-89 reinvestigation add to our understanding of the deposits at the site. These results contribute to our knowledge of a little known aspect of Central High Plains prehistory and provide the basis for future research.

INTRODUCTION

Although archaeological materials dating to the mid-Holocene have been reported from Colorado, New Mexico, Nebraska, southeastern Wyoming, Kansas, and western Oklahoma, the context and nature of paleoclimatological conditions and human occupation is not well-known for this region. This is especially true for the High Plains of eastern Colorado and nearby Kansas and Nebraska where few Archaic deposits have been systematically investigated (Fig. 1). Research on paleoclimatic conditions of the surrounding regions indicates that there may have been severe climatic changes during the mid-Holocene (Bryson, Baerreis, and Wendland 1970). However, how humans adapted to these changes is a matter of debate at this time. The Hutton-Pinkham site, located on the banks of Bonny Creek in eastern Colorado, is beginning to contribute to our knowledge of paleoclimate and prehistory from late Pleistocene to historic times. This paper provides a preliminary overview of the archaeological investigations at the Hutton-Pinkham site.

BACKGROUND

A brief description of the Central High Plains and a discussion of previous paleoenvironmental investigations in the region are relevant to an understanding of the archaeological investigations at the Hutton-Pinkham site.

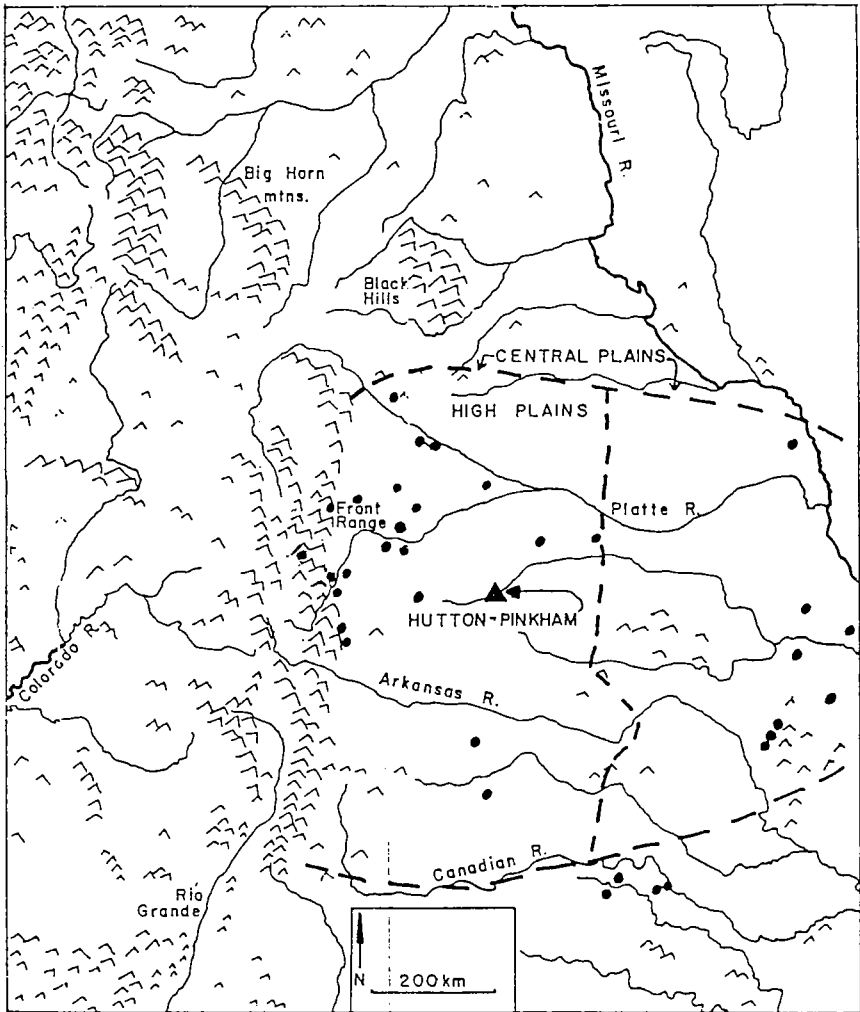


FIGURE 1. Location of the Hutton-Pinkham site, Colorado, on the Central High Plains. The Hutton-Pinkham site is located on a tributary of the South Fork of the Upper Republican River. The dots illustrate Archaic sites in the vicinity.

The Central High Plains

This portion of the Central High Plains physiographic region is characterized by rather flat plains with numerous playas, rolling sand dunes, and numerous streams with typical dendritic drainage patterns. The Arkansas and Platte rivers are the major drainages of this region. However, the Republican, Arikara, and Smokey Hill rivers are more important for the immediate vicinity of the Hutton-Pinkham site. These have incised canyons of more than 100 m in depth through the Ogallala and other Tertiary formations, Peorian loess, and Pierre shale (Thornbury 1965). The plains, sand dunes, and river valleys form the base for the general ecozones of this region. The soil type and water availability

in these three zones largely determine the vegetation cover and hence the resources for both human and animal populations.

Previous Paleoenvironmental Investigations in the Region

Mid-Holocene climate affected both the landscapes and floral communities of the High Plains. Precipitation and erosional regimes in much of the area caused greater degradation, increased calcium carbonate formation, and the development of arid-type soils (Leopold and Miller 1954). Research completed in western regions of the High Plains and the Rocky Mountains indicates that Holocene shifts in vegetation are temporally and spatially variable (Beiswenger 1987; Markgraff and Lennon 1986).

Archaeological research in eastern Colorado has provided a great deal of information about Quaternary paleoenvironments and human occupation at the Pleistocene-Holocene transition. Research at the Dutton and Selby archaeological sites has produced information about late Pleistocene environments coupled with Clovis occupations (Stanford 1979; Stanford and Graham 1978). The Jones-Miller archaeological site, a Hell-Gap complex bison kill, also yielded paleoenvironmental and archaeological information about the early Holocene human adaptation (Stanford 1974). However, the information about paleoenvironmental and archaeological conditions for the time after the end of the Paleoindian occupation of this area is not well-documented. Because of its excellent stratigraphic record of Holocene deposits, containing archaic and possibly other occupation levels, the Hutton-Pinkham site, located in the vicinity of the Dutton, Selby, and Jones-Miller sites, is beginning to yield data on the paleoenvironments and human occupation of the region.

In addition, the site is in the Republican River drainage, location of numerous archaeological sites further downstream in Kansas and Nebraska (D. Bamforth, personal communication; Wedel 1961, 1986). The upper parts of this



FIGURE 2. Cutbank along Bonny Creek with exposed Holocene sediments. Ladder is in area of the excavations at the Hutton-Pinkham site, Colorado.

drainage system have never been intensively investigated. Consequently, our study may yield information for the understanding of paleoenvironments, including the topography, erosion, and sedimentation processes, of many of the sites downstream.

THE HUTTON-PINKHAM SITE

Site Setting

The Hutton-Pinkham site is located on the banks of Bonny Creek, at its confluence with the South Fork of the Republican River. Bonny Creek has created a five-m-deep cutbank in this area, exposing the Holocene deposits (Fig. 2). The Bonny Creek floodplain merges with the South Fork of the Republican River floodplain to the west and north of the site. The floodplains support a cottonwood forest with a variety of undergrowth consisting of shrubs and grasses. Deer and a variety of smaller animals (porcupine, raccoon, skunk, beaver, and smaller rodents) are common in this ecozone, as are a number of migratory and non-migratory fowl species. Away from the floodplain, the landscape rises slowly to the south out of the Republican River drainage until it reaches the flat, rolling plains. This area is dissected by numerous small drainages and rivulets, forming a rather diverse landscape. Prickly pear, yucca, sagebrush, rabbitbrush, and a variety of short and some tall grasses are the dominant vegetation. Rodents and badgers inhabit this area, as do antelope.

Excavation

The Hutton-Pinkham site was test-excavated by amateur archaeologists in 1977. No map of the original excavation exists, but field bags and our re-



FIGURE 3. 1977 excavation area re-exposed in 1989 showing north-south placement of excavation units at the Hutton-Pinkham site, Colorado.

excavation (Fig. 3) show that portions of at least nine 2 x 2 m excavation blocks were involved. The target of the original investigation was an approximately 50-cm-thick soil horizon located two m below the ground surface, thought to date to the Early Archaic period (Greiser 1985:89). Following a rainstorm that washed away a portion of the cutbank, a deeper level was also investigated in 1977.

Our investigations, beginning in 1988, documented the extent of the original investigation through physical evidence and interviews with a number of excavators and visitors to the site. In addition, we cleaned several profiles, excavated one 1 x 1 m test unit in 1988 and seven 1 x 1 m test units in 1989, and excavated approximately one-fourth of a hearth (Fig. 4). Although

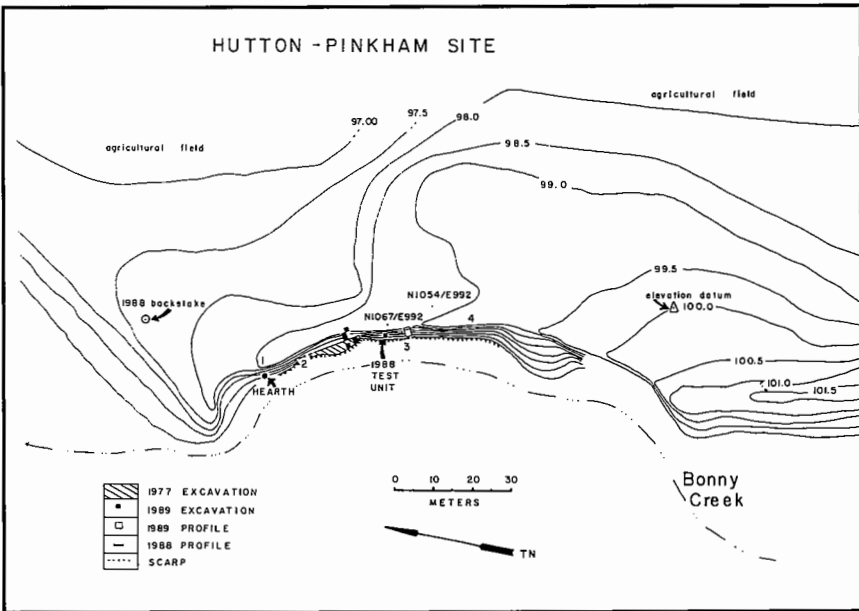


FIGURE 4. Map of excavations at the Hutton-Pinkham site, Colorado, showing placement of units and topographic features. 1-4 shows location of geologic profile appearing in Albanese, Figure 2, this volume. 2: Cutbank profile done in 1988 to identify cultural levels 3: Sedimentary units and soils horizons shown in Figure 13.

this sounds like a major text excavation, it was necessary to excavate four of the test units just to collect data for one column through the site. That is, four units were excavated as a series of steps from the cliff face, in order to avoid having one 1 x 1 m excavation 5 m deep (Fig. 5). In addition, three of the other test units were excavated in order to complete the unfinished 1977 excavation, which left four excavation units incompletely excavated through the Archaic level.

Artifact Assemblage

The Archaic level of the Hutton-Pinkham site yielded chipped stone, ground stone, fire-altered rock, charcoal, worked and unworked bone, and gastropods. Among the 29 chipped stone tools are: two projectile points, probably Archaic



FIGURE 5. 1989 excavations at the Hutton-Pinkham site showing series of four 1 by 1 m test units excavated into the face of the cutbank.



FIGURE 6. Two projectile points from the Hutton-Pinkham site, Colorado. Left: Ogallala formation chert, Right: chert.

in age, indicating the age of this deposit (Fig. 6); eight end scrapers (Fig. 7); cores, including four biface cores and two pebble cores; two gravers; one drill; three thin and three thick bifaces, the former likely preforms and the latter, biface tools; one double sidescraper; and two miscellaneous flake tools

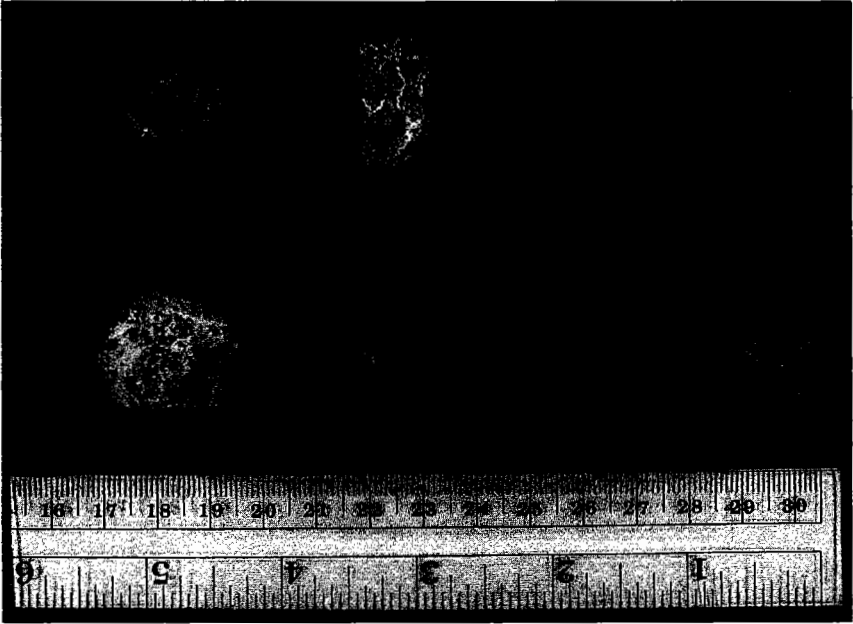


FIGURE 7. End scrapers from the Hutton-Pinkham site, Colorado.

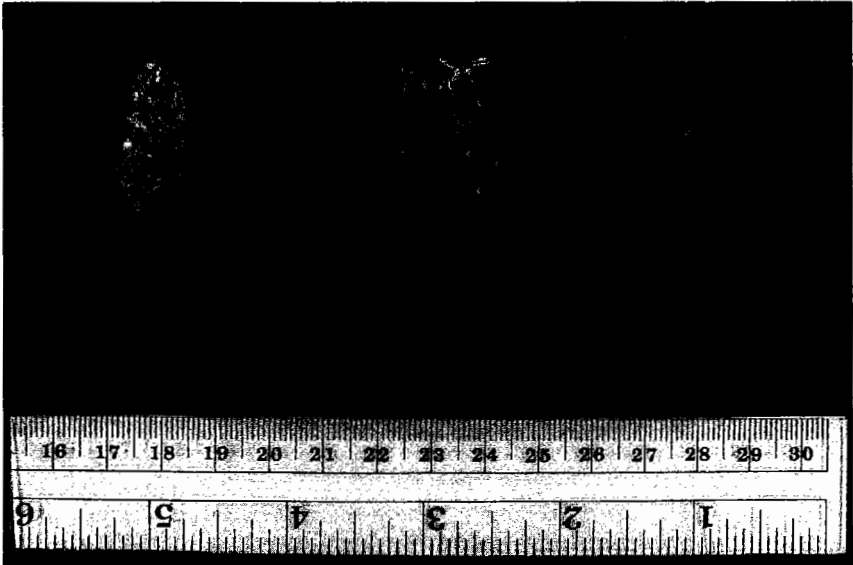


FIGURE 8. Artifacts from the Hutton-Pinkham site, Colorado. Left: drill, center: chert retouched flake from lower (strata between mid-Holocene and Pleistocene deposits) level, right: graver.

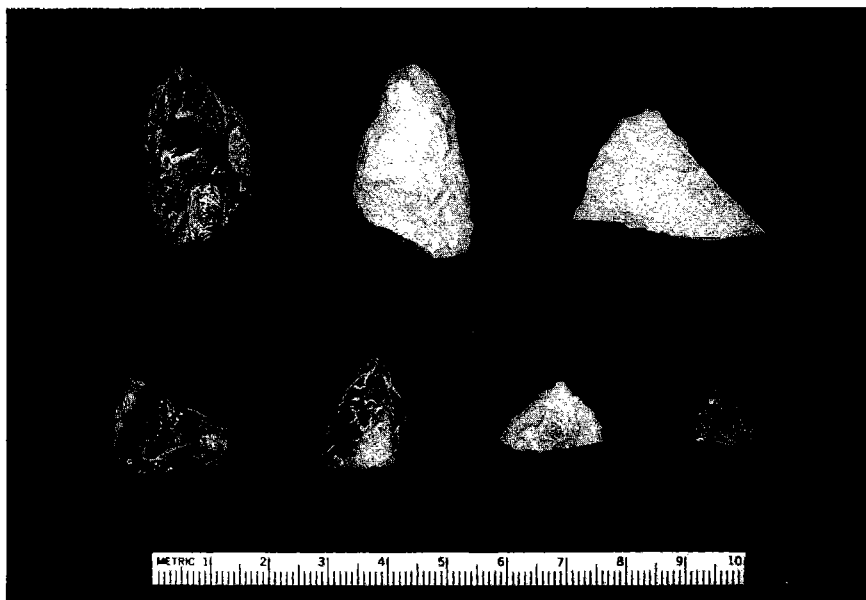


FIGURE 9. Artifacts from the Hutton-Pinkham site, Colorado. Upper row, left: burned basalt biface fragment, center: Ogallala formation chert biface, right: Ogallala formation chert biface fragment, Bottom row, left: Madison chert biface fragment, second from left: chert bifacially retouched tool fragment, second from right: Ogallala formation chert biface tip, right; Madison/Hartville Uplift chert biface fragment.

(Fig. 8-10). Debitage constitutes by far the greatest number of chipped stone pieces ($n=597$). The debitage mostly consists of smaller tertiary flakes, indicating final stages of tool production or tool rejuvenation. In addition to chipped stone, the site also contains eight pieces of ground and pecked stone, two manos, four slab fragments, and at least two hammerstones. Worked bone is also present and includes two tubular beads and two bone awls (Fig. 11). One of the latter is manufactured on a rabbit ulna and the other on a deer or antelope metapodial. Preliminary analysis indicates variation in densities of this material through the main Archaic occupation level of the site (Fig. 12).

Several different raw material types are represented in the 29 chipped stone tools. Contained within the assemblage are raw materials from the Madison/Hartville, Dakota, and Morrison formations, as well as petrified wood. It is likely that most of this material is local; that is, it is available in gravels of nearly every stream in the region. The several pieces with cortex support this interpretation. The general extreme utilization of the raw material presents an unusual situation for Mid-Holocene Archaic sites on the High Plains. The paucity of good raw materials in the vicinity may be one explanation for the small, poor quality artifacts in the assemblage.

Bone constitutes by far the largest artifact class at the Hutton-Pinkham site. Bison has been identified as the most common species, but medium-size mammals (deer and/or antelope), and small mammals (rabbit, ground squirrel, and other rodent) and several species of bird are also represented. In addition,

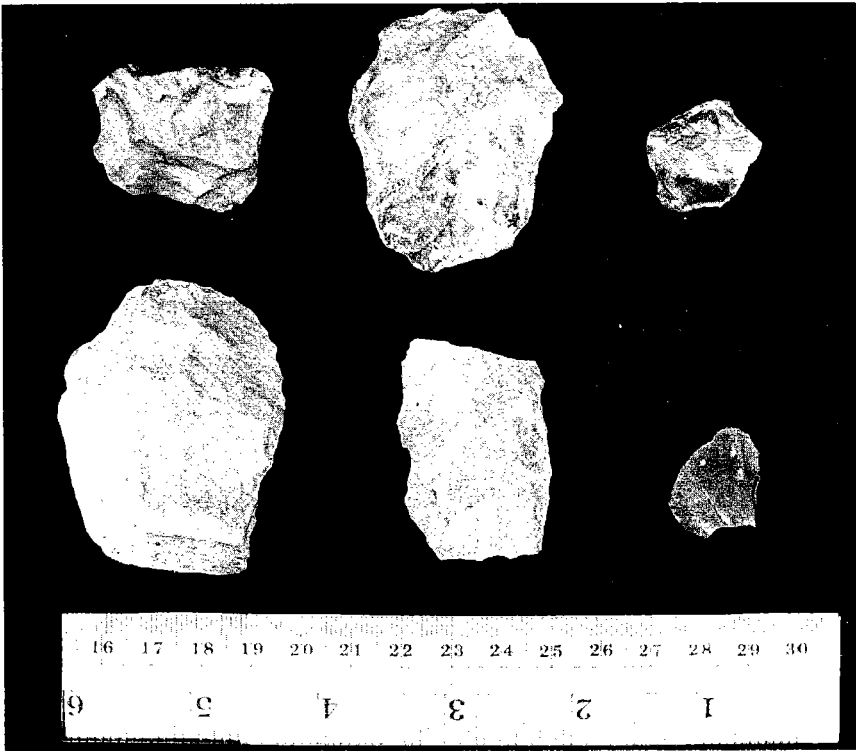


FIGURE 10. Artifacts from the Hutton-Pinkham site, Colorado. Upper row, left: chert core tool, center: Madison formation chert thick biface, right: chert core, Bottom row, left: Morrison quartzite core, center: quartzite bifacial core, right: plain chert flake.

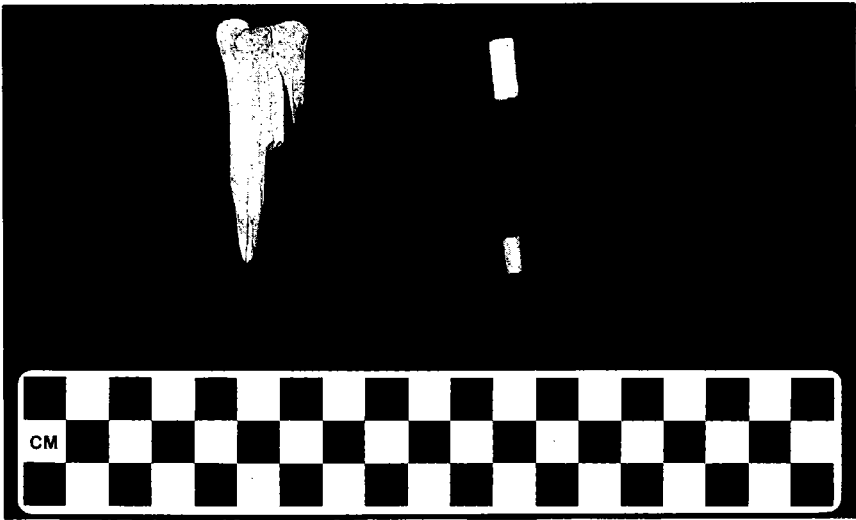


FIGURE 11. Worked bone from the Hutton-Pinkham site, Colorado. Deer/antelope metapodial bone awl and two bone beads.

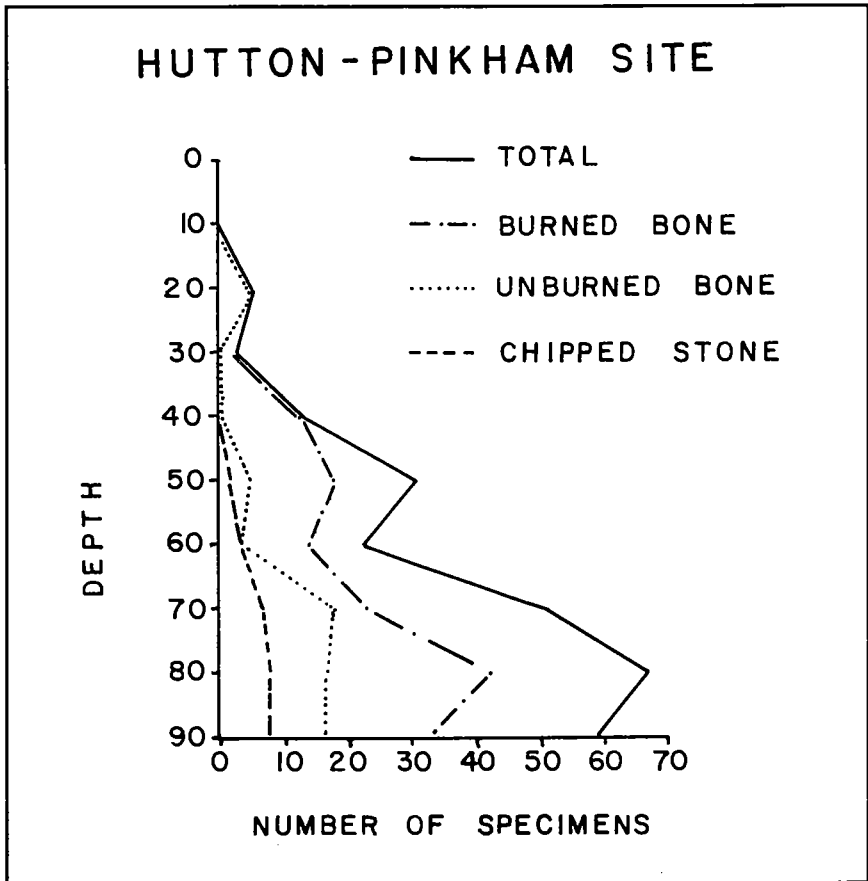


FIGURE 12. Unit L10-5, N1074/E994, 1988 test unit (see Fig. 4) illustrating frequencies of artifacts by depth. Surface of this unit (depth of 0 cm) is approximately 2 m below top of the cliff. The Archaic horizon is located from 70-90 cm below surface in this unit.

a few snail and freshwater shells have been recovered from the deposits at the site.

The effects of weathering on the recovered bone varies. Some rodent bones are unweathered, indicating recent intrusion. Weathering in the form of surface deterioration and root casts is present on nearly all specimens (Behrensmeier 1978). On medium- and large-size artiodactyls, small, dense bones such as carpals and tarsals exhibit surface deterioration only, while long bones also tend to exhibit longitudinal (dry bone) cracking and surface flaking. In fact, fragments of longitudinally cracked and weathered bone are the most common specimens, accounting for several thousand pieces.

Many of the bones from the Hutton-Pinkham site are burned or calcined. In one sample unit (Table 1, Fig. 12), 70% of the bone is burned, and some is calcined. The reasons for this are currently under investigation. The presence of calcined bone in the site indicates that the bone was exposed to higher temperatures than that commonly associated with roasting or other cooking/

TABLE 1. Unit L10-5, N1074/E994, 1988 test unit, artifact frequencies in the Archaic stratum (70-90 cm below surface).

	N	%
Unburned bone	51	(25%)
Burned bone	118	(59%)
Chipped stone	23	(11%)
Other		
Small animal bone (possibly intrusive)	1	(1%)
Snail	4	(2%)
Shellfish (probably freshwater mussel)	4	(2%)
TOTAL	201	

heating activities done with muscle and skin attached. The analysis of the burned or calcined bone location, density, and distribution within the site and between different species of animals may lead to further clarification of the reasons for the bone condition.

The deeper level of the site investigated in 1977 was contained in a clayey deposit at the base of the cutbank, approximately 4.5 m below the surface (Fig. 13; see also Albanese, Fig. 2, this volume). This level yielded chipped stone artifacts and bone. The chipped stone includes modified pieces and debitage. The debitage in this stratum consists of proportionately more larger pieces than the debitage from the Archaic stratum. The bone in this stratum represents Pleistocene megafauna, including a partially permineralized distal camel tibia, as well as medium (deer/antelope) and smaller mammals. The 1989 investigation located several strata containing Pleistocene megafauna, but we have not yet verified the presence of chipped stone or the association of the chipped stone with megafauna.

Features

The 1977 excavation reported charcoal concentrations, fire-altered rock, and probable hearths. It is difficult to identify fire-altered rock at the site as all cobbles appear to be heat altered. Much of this is due to the nature and content of the deposits. Therefore, the reports of fire-altered rock may be inaccurate. The reported hearths were not documented, hence these cannot be verified either. Consequently, the context of the charcoal collected in 1977 is uncertain.

Our investigation, however, did find a hearth in the main Archaic horizon (Fig. 4), and we excavated approximately one-fourth of this feature. The hearth outlined is exceedingly ephemeral. The small portion that we were able to observe indicates a circular/subcircular surface or basin-shaped feature (Fig. 14). Because the hearth has not been completely excavated, horizontal dimensions are not available, but depth of the stain is approximately 15 cm. The few artifacts (i.e., bone and chipped stone) were all found near the surface of the hearth as was much of the charcoal. Analysis of carbonaceous silt from the hearth revealed a minimum age of 4310 ± 200 RCYBP: 2310 B.C. (Beta-35336).

Artifacts located in the cutbank indicate that the site extends for approximately one hundred meters along the cutbank, and for an unknown distance to the east into the terrace deposits (see Albanese, Fig. 2, this volume).

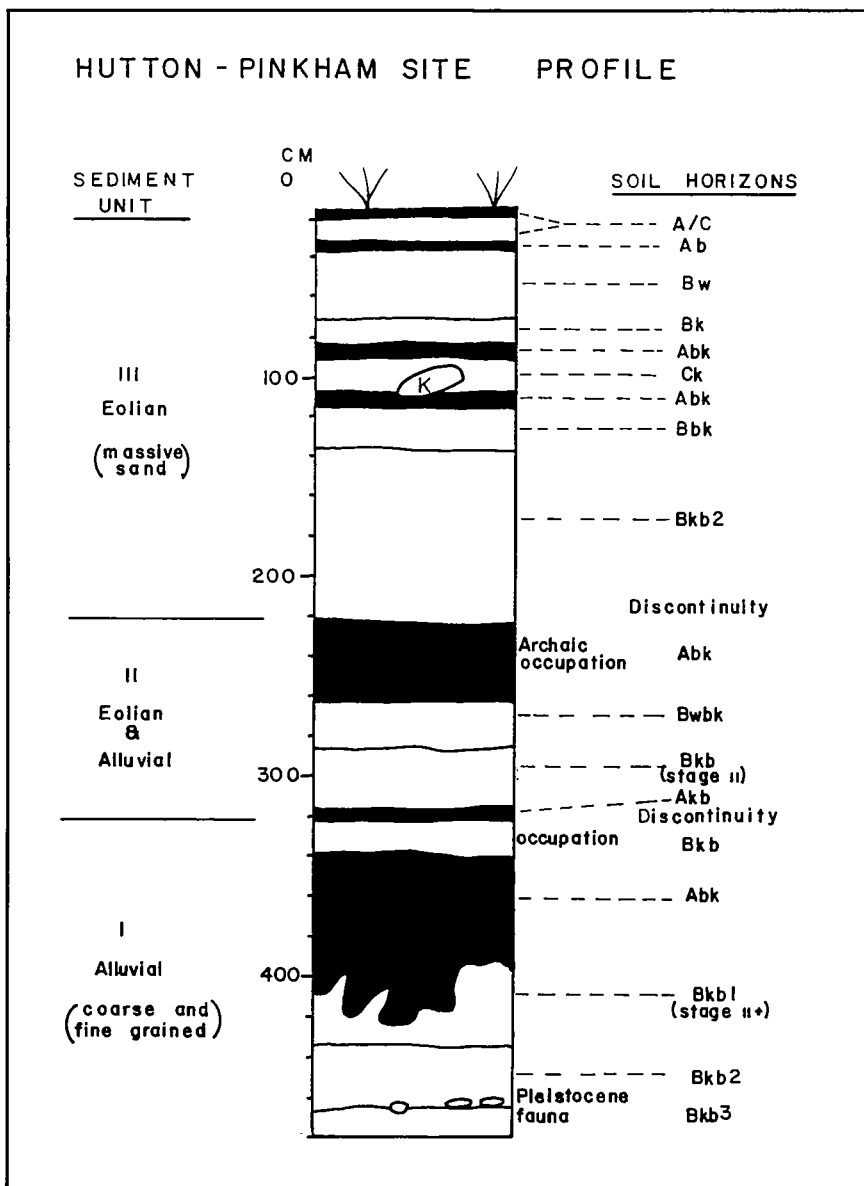


FIGURE 13. Sedimentary units and soils horizons from the Hutton-Pinkham site, Colorado. Location of profile along cutbank is shown in Figure 4 (#3) and Albanese Figure 1 (#2), this volume. This figure was adapted from a field profile draw by Mike McFaul.

In addition, several artifacts were located in strata between the mid-Holocene and Pleistocene deposits suggesting the presence of other occupations (Fig. 8, center; see Albanese, Fig. 2, this volume).

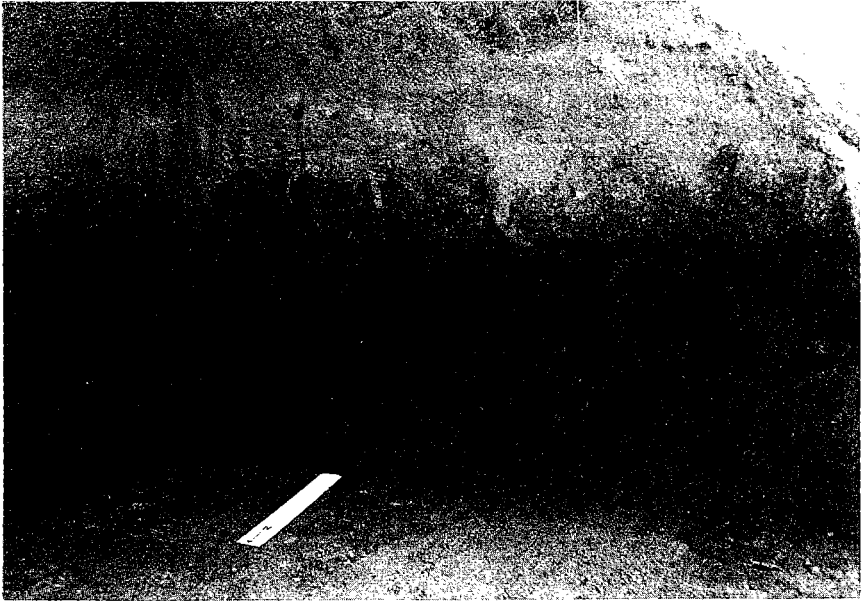


FIGURE 14. Partial excavation of hearth one from the Hutton-Pinkham site, Colorado. Note ephemeral nature of the hearth outline. Carbonaceous soil from the hearth has been dated to 4310 ± 200 B.P. (Beta-35336).

CONCLUSION

At the time of the original excavation, and indeed still today, Archaic archaeological finds were rare in this area of the Central High Plains and human occupation was thought to have been restricted to mountain refugia (Benedict 1979; Benedict and Olson 1978). The presence of surface finds and a few sites in other parts of the Plains contradict this explanation (Greiser 1985; Wedel 1986:73). Although a number of Early Archaic sites are reported from the Central High Plains, none of these is within less than one hundred kilometers of the Hutton-Pinkham location. To the west, these include the Rocky Mountain Front Range sites of Magic Mountain, LoDaisKa, and Wilbur Thomas (Breternitz 1971; Irwin and Irwin 1959; Irwin-Williams and Irwin 1966). The foothill location of these sites certainly fits the refugium model of mid-Holocene occupation. Down the Republican River drainage, to the northeast of the Hutton-Pinkham site, in the rolling plains and sand dunes of Nebraska, is the Spring Creek site (Grange 1962, 1980). Yet, further to the east, in the east Central Plains, is the Logan Creek site in Nebraska (Kivett 1958) and the Coffey site in Kansas (Schmits 1978, 1980). With the exception of the Spring Creek site, all others mentioned above are in drastically different paleoenvironmental contexts from the Hutton-Pinkham site. Only one Middle Archaic site, Dipper Gap (Metcalf 1974) is reported within the vicinity of the Hutton-Pinkham site. Hence, the Hutton-Pinkham site is seen as relevant to the understanding of the mid-Holocene and earlier occupation of the Central High Plains. Although more information is needed, it is likely that the site will yield further information about human adaptation on the Central High Plains during the mid-Holocene.

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