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Recon John Shelter and the Archaic-Woodland Transition in Southeastern Colorado

by

Christian J. Zier and Stephen M. Kalasz

ABSTRACT

Archaeological excavation was conducted at a prehistoric rock shelter site on the Fort Carson Military Reservation, southeastern Colorado. The thickness of archaeological deposits, which occur entirely within alluvial sediments, ranges up to 2.5 meters. Three radiocarbon-dated cultural components are present: Middle Archaic period (ca. 4,400-3,700 B.P.), Late Archaic period (2,000-1,800 B.P.), and Early Ceramic (Woodland) period (1,800-1,000 B.P.). A depositional hiatus of 1500-2000 years is evident between the Middle and Late Archaic components. A hunting/gathering economy with very limited maize horticulture is evident at the site, and little evolution in subsistence orientation is detectable. Maize was present beginning in the Late Archaic period. Data analysis indicates that technological innovation and change were minimal during the span of occupation of the site, with the exceptions of reduction in projectile point size and introduction of ceramics in the Early Ceramic period. A static and relatively isolated adaptation is inferred.

INTRODUCTION

Implicit in most culture-historical reconstructions is the assumption that culture change accompanies the passage of time. Prehistoric societies tend to be viewed as entities for which directional change comes almost naturally—smaller to larger, organizationally simple to complex, technically basic to sophisticated. Michlovic (1986) has recently challenged this view, instead proposing that prehistoric Plains groups exhibited "responsive adaptation" to specific environmental conditions. According to Michlovic, true evolution, i.e., progressive, directional change, is not conclusively demonstrated in the long term archaeological record of the Plains.

Recon John Shelter (5PE648) is a deeply stratified site located in the plains-foothills transition zone in Pueblo County, southeastern Colorado. Middle Archaic, Late Archaic, and Early Ceramic (Plains Woodland) components are present. Analysis of long-term adaptation strategies over approximately a 4,000-year occupation span illustrates a condition of remarkable economic stability and lends support to Michlovic's notions of Plains evolutionism. If Recon John Shelter can be taken as representative of southeastern Colorado during its time of occupation—an assumption that is not altogether warranted given the dearth of archaeological research in the area—the transition from Archaic to Plains Woodland occurred with hardly a whisper.

Recon John Shelter is located on the Fort Carson Military Reservation 35 km south of Colorado Springs, Colorado (Fig. 1). Excavations were undertaken in 1986 by Centennial Archaeology, Inc. under contract with the National Park Service-Rocky Mountain Regional Office (Zier 1989). The work was funded by the Department of the Army, Fort Carson Command.

PHYSICAL AND BIOTIC SETTING

Turkey Creek originates in the Front Range southwest of Colorado Springs and flows generally southward out of the foothills along the NNW/SSE-trending Turkey Creek anticline (Fig. 1). From the eastern margin of the foothills the stream flows through a shallow valley, then is superposed onto the flank of the Turkey Creek anticline for several kilometers in the south-

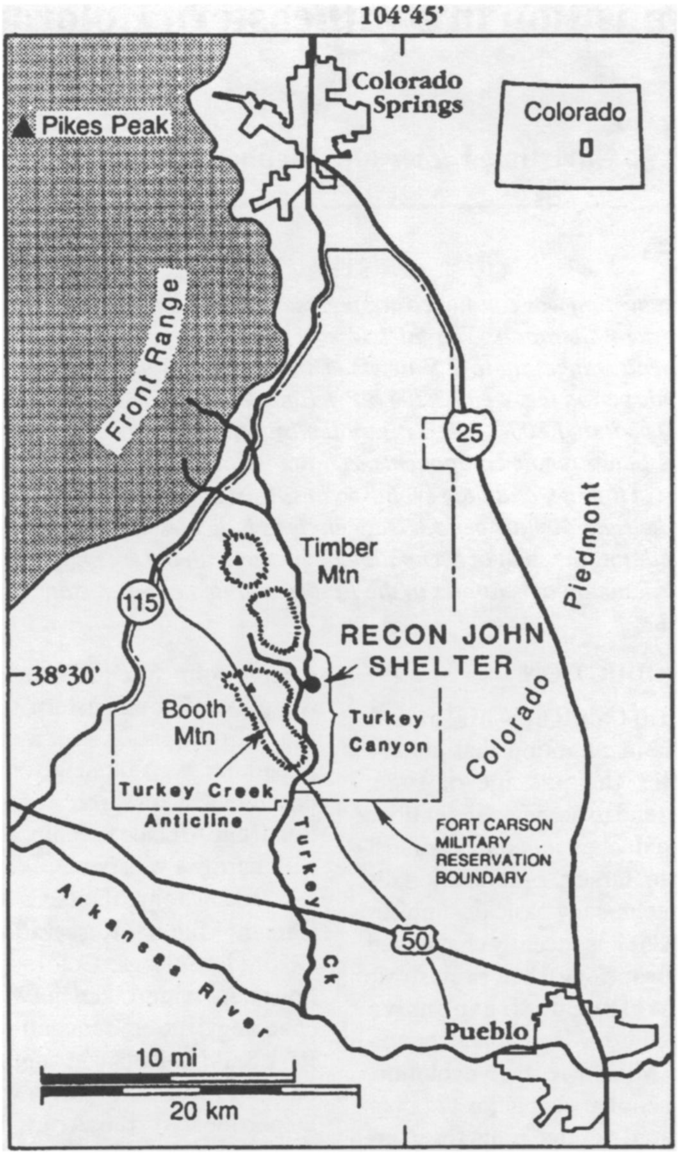


Figure 1. Map of Fort Carson Military Reservation, Colorado, showing location of Recon John Shelter and major topographic features.

central portion of the Fort Carson Military Reservation. The stream crosses Dakota Sandstone in this area and has carved a short canyon varying from 200 m to 300 m in width and from 40 m to 60 m in depth. From the southern military base boundary Turkey Creek flows south for another 16 km to the Arkansas River. Timber Mountain and Booth Mountain, both of which are local manifestations of the Turkey Creek anticline, rise immediately to the west of Turkey Creek. Sediment draining eastward into Turkey Canyon from these uplands has tended to push the stream toward the east side of the canyon, the result being the undercutting of Dakota Sandstone cliffs. Recon John Shelter is one such overhang in the east side of Turkey Canyon (Fig. 2) (Madole 1989: 276). Elevation of the site is 1725 m.

Figure 2. View north-northeast of Recon John Shelter (arrow) at base of undercut cliff in east side of Turkey Canyon.

The area currently exhibits a semi-arid continental climate. Annual precipitation accumulations are in the 305-380 mm range. High and low mean temperatures in January, the coldest month, are 7° C and -9° C, and in July, the warmest month, 31° C and 15° C. Average daytime relative humidity is a low 39% (Department of the Army 1980: 3-1; Zier 1989: 23). Regional paleoclimatic implications of the Recon John Shelter data analysis are described in a later section. Turkey Canyon lies along a north/south-trending topographic and biotic transition zone between the foothills of the Front Range and the high plains of the Colorado Piedmont. Foothills and topographic prominences (isolated mesas, ridges) at elevations above ca 1700 m exhibit shrub thicket and coniferous forest vegetation dominated by various mixes of piñon pine (*Pinus edulis*), ponderosa pine (*P. ponderosa*), one-seed juniper (*Juniperus monosperma*), Gambel or scrub oak (*Quercus gambelii*), and mountain mahogany (*Cercocarpus montanus*). At elevations below 1700 m, shortgrass steppe vegetation is predominant. Major plant species include grasses such as blue grama (*Bouteloua gracilis*), needle and thread (*Stipa comata*), western wheatgrass (*Agropyron smithii*), red threeawn (*Aristida logisita*), and Indian ricegrass (*Oryzopsis hymenoides*), as well as prickly pear (*Opuntia* spp.), cholla (*Opuntia imbricata*), yucca (*Yucca glauca*), and rabbitbrush (*Chrysothamnus nauseosus*). Narrow riparian zones characterize Turkey Creek and other drainages in the vicinity having perennial surface or subsurface flows. Riparian species of Turkey Canyon in the vicinity of Recon John Shelter include cottonwood (*Populus* sp.), willow (*Salix* sp.), sunflower (*Helianthus* sp.), cocklebur (*Xanthium strumarium*), gooseberry (*Ribes* sp.), skunkbrush (*Rhus trilobata*), and horsetail (*Equisetum* sp.). The immediate site area currently exhibits a heavy cover of cheatgrass (*Bromus tectorum*), an introduced species (Zier et al. 1988: 34-35; Zier 1989: 28-32).

A diversity of faunal species is found in the area, reflecting not only its ecotonal nature but also topographic variability. No complete listing of the fauna of the Fort Carson Military Reservation is currently available; however, an archaeological species inventory from Recon John Shelter, which is essentially modern, is provided in a later section.

CULTURAL SYNTHESIS

Several overlapping and largely correlative cultural-historical taxonomies have been used by archaeologists in eastern Colorado and adjacent plains areas. The stage/period scheme employed here is modified from Wood (1967), Gunnerson (1987), and Anderson (1989a; see espec. Table 2.1). A similar reconstruction is provided in Van Ness et al. (1990: Fig. 3). The culture-historical framework is reviewed only to the extent necessary to provide a context for discussion of Recon John Shelter. Three major stages of aboriginal occupation are recognized in southeastern Colorado: Paleo-Indian (10,000-5500 B.C.), Archaic (5500 B.C.-A.D. 200), and Ceramic (A.D. 200-1800). Paleo-Indian evidence from the immediate Fort Carson area is rare, and in fact only limited Paleo-Indian materials have been recovered from the Arkansas River drainage in Colorado (Anderson 1989a: 12-17).

The Archaic stage is subdivided into Early (5500-3000 B.C.), Middle (3000-1500 B.C.), and Late periods (1500 B.C.-A.D. 200). Evidence of Early Archaic period habitation of the area is as scarce as Paleo-Indian (Zier et al. 1987: 2-6), a phenomenon that may reflect human response to Altithermal climate conditions (e.g., Benedict 1979), or perhaps merely geomorphic influences on site preservation (Schuldenrein 1985). The Middle Archaic period, identifiable through McKean-like lithic artifacts (see Frison 1978: 49-50), is far better manifested in eastern Colorado than its predecessor although sites of this age are still relatively uncommon. Identifiable Middle Archaic components occur at fewer than 6% of the several hundred surface sites that have been recorded at Fort Carson (Alexander et al. 1982; Zier et al. 1987: 2-44; Van Ness et al. 1990). Late Archaic period evidence increases dramatically over that of the previous period (Zier et al. 1987: 2-76, 2-44; Anderson 1989a: 18). Sites are widespread on the eastern Colorado plains and in the adjacent foothills of the Rocky Mountains, occurring in a variety of ecological settings. A broad-spectrum hunting/gathering economy is evident on the basis of tool kits, faunal and vegetal remains, and site locational trends (Zier 1989: 16; Anderson 1989a: 18).

The Ceramic stage is also subdivided into three periods: Early Ceramic or Plains Woodland (A.D. 200-900/1000), Middle Ceramic (A.D. 900/1000-1500), and Late Ceramic or Protohistoric (A.D. 1500-1800). The Early Ceramic period is very much in evidence at Fort Carson and in the adjacent southeastern Colorado plains area. Archaeological hallmarks are small, corner-notched projectile points and cord-marked and occasionally plain-surface ceramics. Early Ceramic period radiocarbon dates have been taken from two architectural sites in the Fort Carson area, and projectile points of probable Early Ceramic age have also been found in association with structures at surface sites (Hunt 1975; Zier and Kalasz 1985: 75, 85-89).

This evidence notwithstanding, there is little to suggest that significant settlement shifts occurred in Woodland times. The number of known Early Ceramic sites in many areas is increased over that of the Late Archaic period (e.g., Zier et al. 1987: 2-44), but could simply reflect factors of preservation and recognition.

Middle Ceramic period sites are abundant in the area and far more often exhibit architectural remains (Kalasz 1988; Lintz 1984: 48-50; Zier et al. 1987: 2-10 to 2-12; Zier et al. 1990). Regional population increase is at least a plausible partial explanation for the increase in site numbers, although site visibility and longevity owing to the presence of architecture may greatly affect archaeological perceptions of regional demography. Small side-notched arrow points replaced corner-notched forms around A.D. 1000; the manufacture of cord-marked and plain ceramics continued from the preceding period. The western high plains region was apparently abandoned sometime between A.D. 1400 and 1450, perhaps due to a prolonged drought (Lintz 1984: 48, 54, 108, 390-400; Gunnerson 1987: 90; Zier et al. 1987: 2-12). Reoccupation of the eastern Colorado plains occurred in the 17th A.D. century, first by Athabascans (Apache) and subsequently, during the 18th century, by Comanches (see summaries in Zier et al. 1987: 2-13 to 2-18; Weber 1990).

SITE DESCRIPTION

Methods

Recon John Shelter is at the base of a nearly vertical cliff of Dakota Sandstone. The cliff is 6m high at the site but increases to 60 m some 2 km to the south. The shelter is recessed a maximum of 3 m into the cliff and opens almost directly to the west (262°). The shelter proper, 15 m wide, was probably the focus of human habitation although nearly all interior deposition had been removed by vandals prior to testing and excavation between 1984 and 1986. A steep, irregular cut was left beneath the shelter dripline, and a mantle of backdirt up to 60 m thick lies just outside the shelter. Excavations were therefore focused on still-intact cultural deposits in alluvial sediments between the dripline and the steep cutbank of Turkey Creek 6 m west (Figs. 3, 4).

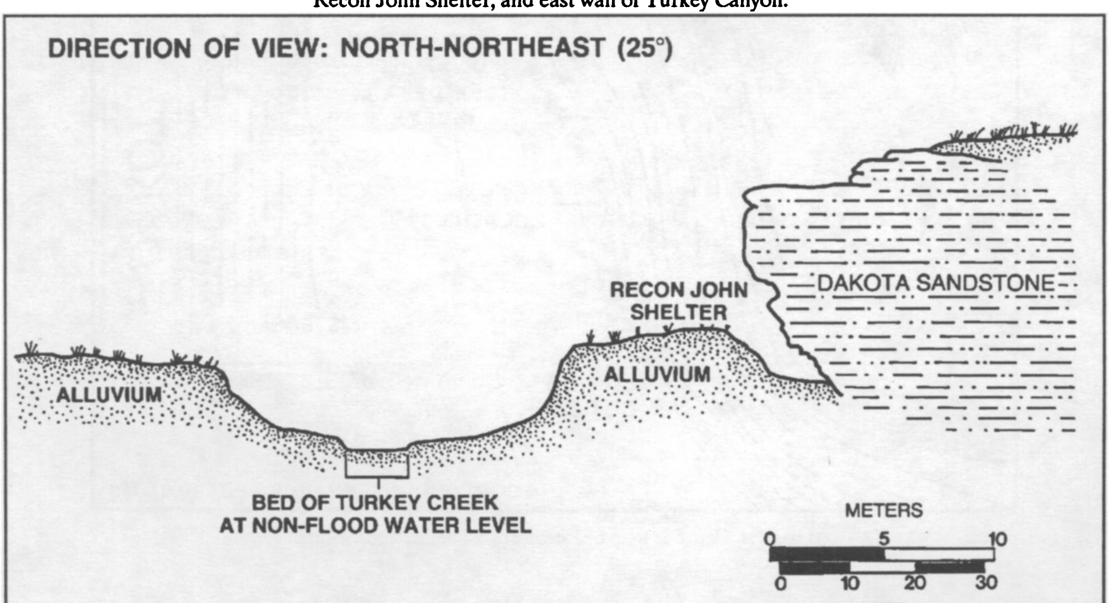
A 6 m long, 1 m wide segmented trench was excavated. A single offset 1 m x 1 m unit was excavated adjacent to and south of the trench at its east end. In addition, a unit measuring 1 m x 0.75 m (Test Pit 3) was excavated in a small remnant block of intact deposition at the far south end of the shelter interior, and the east side of the Turkey Creek cutbank was cleared and profiled in three places (Cut Bank Locations 1-3; Fig. 4). All excavations were conducted in arbitrary 5-cm levels (Figs. 5, 6). Levels in four excavation grids within the main trench (grids B-3 through B-6) were artificially dipped to the west in order to approximate the slope of ground surface. The two easternmost units (B-1 and B-2) and Unit A-1 were level.

All materials excavated from grids B-1 through B-6 were screened through 1/4 inch (6.35 mm) mesh, with the exception of the lower part of grid B-2 (below). All soil excavated from grid A-1 to a depth of 1.4 cm (through arbitrary Level 27) was water-screened through fine mesh (1/16 inch, 1.6 mm). A massive spall of roof fall encroached laterally into the unit beginning in Level 24, and fine water screening was shifted from grid A-1 to grid B-2 beginning with Level 26 in order to maintain comparability in the volume of fill screened from each 5 cm level. Grid B-2 was fine screened from Level 26 through Level 50 at the base of the excavation (depth, 2.5 m). Units A-1 and B-2 together provided an offset column of fine-screened deposits, the two grids sharing a common corner (Fig. 5).

Stratigraphy and Dating

The full stratigraphic record of the site was visible only in the main excavation trench (Grids A-1 and B-1 through B-6), and the following discussion is limited mainly to this area of the site. Seven principal natural strata are identified

Figure 3. Cross-section showing interrelationship of present channel of Turkey Creek, Recon John Shelter, and east wall of Turkey Canyon.



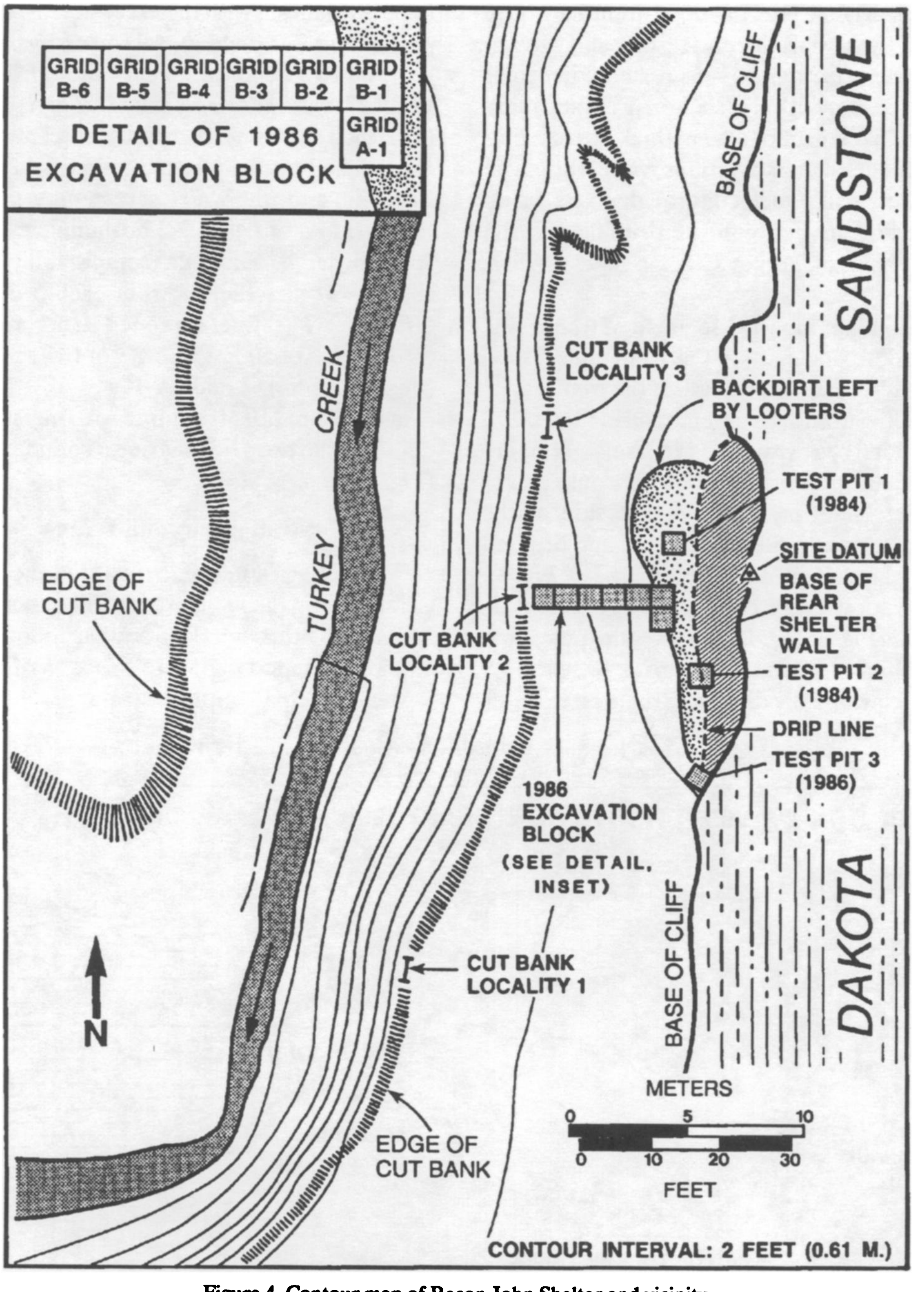


Figure 4. Contour map of Recon John Shelter and vicinity.

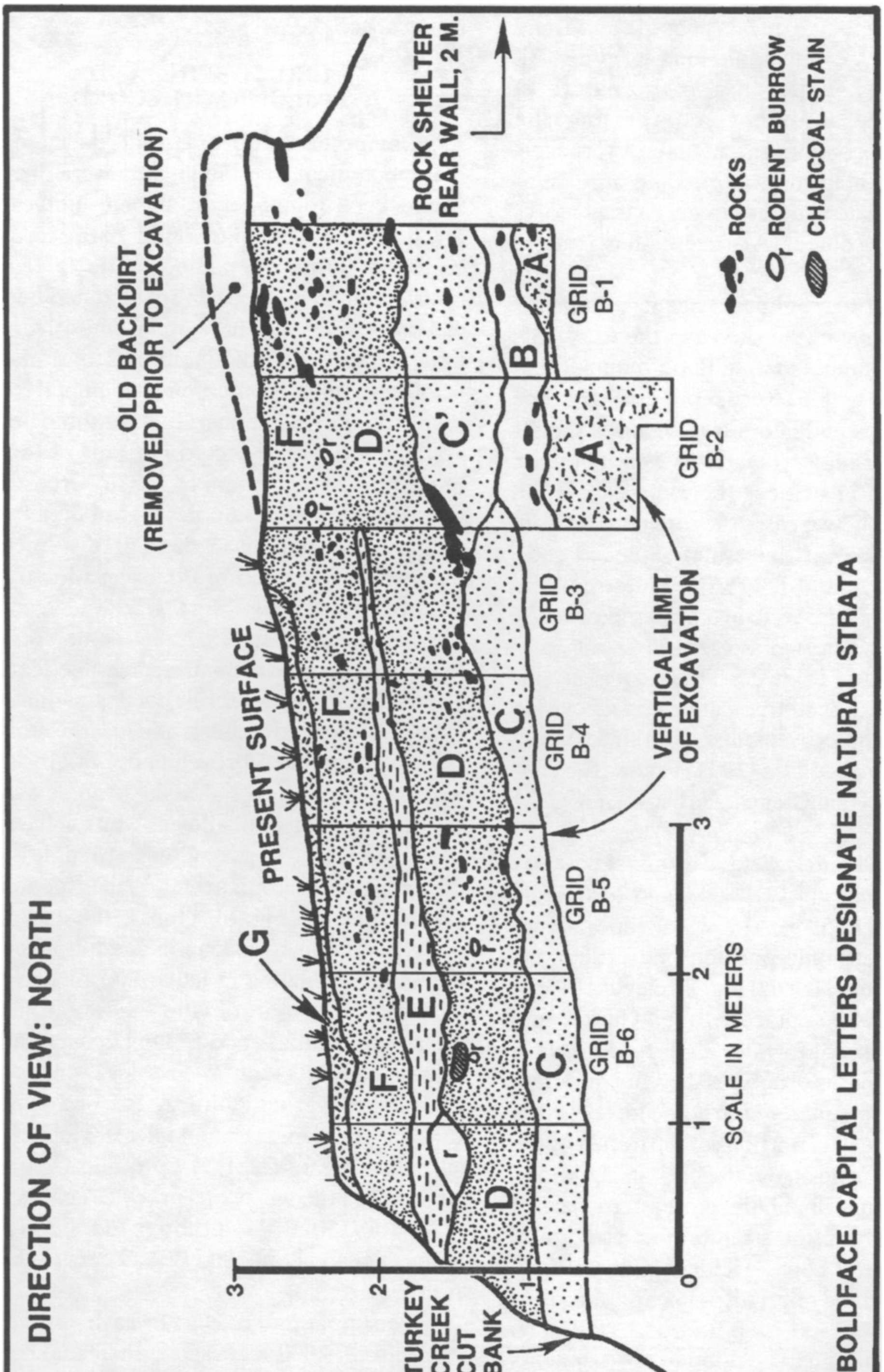


Figure 5. Stratigraphy in north wall of principal excavation trench.

(Fig. 5). Without exception, microstratification is absent in the deposits. This fact probably reflects the combined effects of both natural and cultural processes including long-term depositional stability, uniformity in the nature of stream-borne sediments comprising the deposits, bioturbation, and human disturbance. All strata are alluvial in origin, and are distinguished from one another largely on the basis of color and clay content. An exception is Stratum E (below).

All strata are cultural except stratum E, which intrudes into the site from the west (Fig. 5). This is a channel margin flood remnant that was deposited within a very short period of time and does not extend laterally to the rock shelter proper. Nine radiocarbon dates were obtained from contexts in or near the main excavation trench. In all but two cases they are derived from detrital charcoal in fine water-screened sediments. Units A and B are the oldest cultural strata, with Middle Archaic period radiocarbon dates (uncalibrated) of 3680 ± 100 B.P. and 4400 ± 80 B.P. (Table 1). These dates are inverted with respect to stratigraphic position (Figs. 5, 7). The provenience of a third Middle Archaic date of 4050 ± 120 B.P. spans the contact between Unit B and overlying Unit C/C1 (Fig. 7).

Units C/C1 and D yielded terminal Late Archaic period dates of 1910 ± 90 and 1870 ± 50. A third date of 3530 ± 100 is far too old considering stratigraphic position and artifact associations (Zier 1989: 67) and is rejected (Table 1; Figs. 5, 7). The contact between Units B and C/C1 is an unconformity that represents a depositional hiatus of 1500-2000 years duration.

Unit D is separated from Unit F in the western and central portions of the trench by the sterile flood deposit, Unit E. Units D and F merge indistinguishably in the eastern part of the trench. Above the stratigraphic position of the flood deposit Unit F yielded Early Ceramic (Plains Woodland) period radiocarbon ages of 1500 ± 70 B.P., 1400 ± 90 B.P., and 1150 ± 60 B.P. (Table 1). Thus, the flood deposit appears to have been laid down at the approximate temporal boundary between the Late Archaic period and the Plains Woodland period, ca 1870-1400 B.P. (Figs. 5, 7). Thin Unit G overlies Unit F near the modern surface; it did not yield radiocarbon dates.

GEOMORPHIC AND BIOLOGICAL RECORD

Comprehensive geomorphic, palynological, macrobotanical, and faunal data were obtained from Recon John Shelter; all bear implications for paleoclimates. Gastropod data were also collected, although paleoclimatic interpretations based on gastropods are shunned because of a general absence of regional control samples and because of the likelihood that the assemblage reflects microenvironmental rather than regional conditions. Geomorphological investigation was conducted not only of this site but of an 8.5 km segment of Turkey Creek in the site vicinity. Pollen samples were taken from a stratigraphic column in the Turkey Creek cut bank at the west end of the excavation trench. Macrofloral remains were retrieved from the fine-screened bulk soil samples at all levels and from specific hearths and hearth-like features. Faunal remains were retrieved systematically from all excavated contexts and in large numbers from fine screened proveniences in Grids A-1 and B-2 (Anderson et al. 1989; Madole 1989).

Three principal alluvial units have been identified along Turkey Creek (Madole 1989), of which two are represented in the Recon John Shelter profile (Fig. 6). Unit 1, the earliest, is early to middle Holocene in age but may have begun accumulating in latest Pleistocene time. The uppermost part of Unit 1 is represented at the site by Strata A and B. Unit 2 is a relatively thin (usually less than 75 cm thick) veneer of alluvium that overlies Unit 1. At Recon John Shelter it is rich in archaeological evidence and subsumes Strata C/C1, D/F, E, and G (Fig. 6). This unit in the valley of Turkey Creek dates ca 2000-100/150 B.P., although no deposition younger than about 1000 B.P. occurs in the site profile.

The upper part of Unit 1 was deposited earlier than ca. 4,000 years ago as indicated by C-14 dates from Recon John Shelter, and the older part of Unit 2 was deposited mainly from about 2000 to 1000 B.P. In the valley of Turkey Creek,

Table 1. Recon John Shelter Radiocarbon Dates (Dates are ordered stratigraphically from highest to lowest).

Sample No. (Beta-)	Provenience	Natural Stratum Association	Raw Date (Radiocarbon Years B.P.)*	Claibrated Date in Years B.P. (Corrected Christian Calendar Date-Parentheses)**	Christian Calendar One-Sigma Range	Depth (cm)***
24243	Grid A-1, Level 5	D/F	1150 ± 60	1061 B.P. (A.D. 889)	A.D. 789- 969	20-25
**** 11898	Test Pit 1, Level 11	Unknown	1400 ± 90	1303 B.P. (A.D. 647)	A.D.567-677	45-55
24244	Grid A-1, Level 11	D/F	1500 ± 70	1389 B.P. (A.D. 561)	A.D. 446-632	50- 55
24242	Cutbank Locality No. 2	D/F	1870 ± 50	1827 B.P. (A.D. 123)	A.D. 77-215	90
24245	Grid A-1, Levels 20-22	C/C[1]	3530 ± 100	3835 B.P. (1886 B.C.)	2027-1740 B.C.	95-110
24246	Grid B-2, Levels 25-26	C/C[1]	1910 ± 90	1868 B.P. (A.D. 82)	2 B.C.-A.D.214	115- 125
24247	Grid B-2, Levels 31-34	B-C/C[1]	4050 ± 120	4533 B.P. (2584 B.C.)	2872-2460 B.C.	145-165
24248	Grid B-2, Levels 39-42	A	4400 ± 80	4983 B.P. (3034 B.C.)	3296-2919 B.C.	185-205
24249	Grid B-2, Levels 47-50	A	3680 ± 100	4072, 4029, 3991 B.P. (2123, 2080, 2042 B.C.)	2200-1940 B.C.	225-245

* Assumes C-14 half-life of 5,568 years.
** Employs calibration system of Stuiver and Reimer (1986)
*** Depth is measured from contemporary ground surface, or from estimated ground surface level beneath looters' backdirt pile.
**** The sole radiocarbon date from 1984 test excavations (Zier and Kalasz 1985: 75)

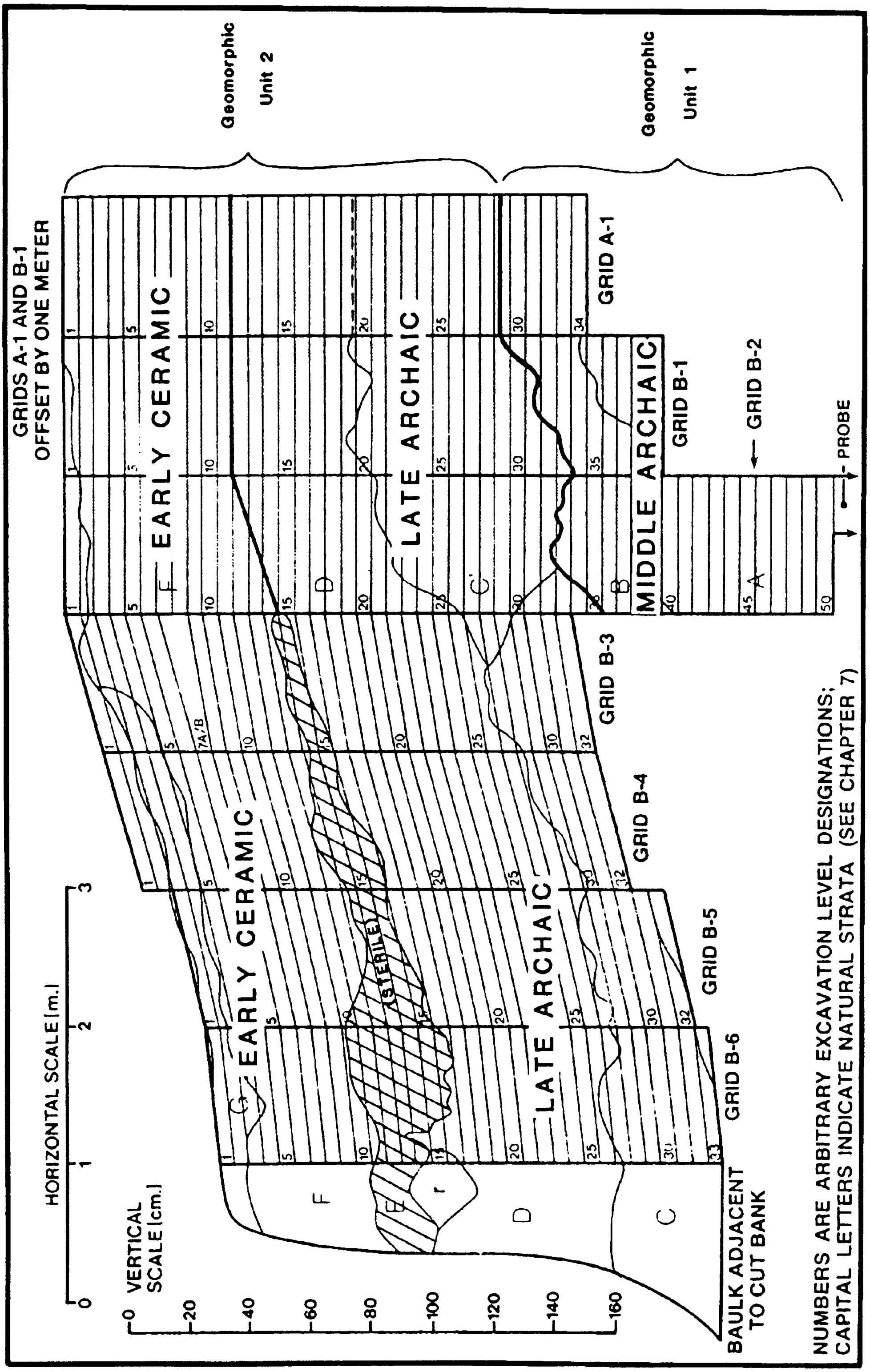


Figure 6. Schematic profile of principal excavation trench showing temporal assignments of natural units and excavation levels.

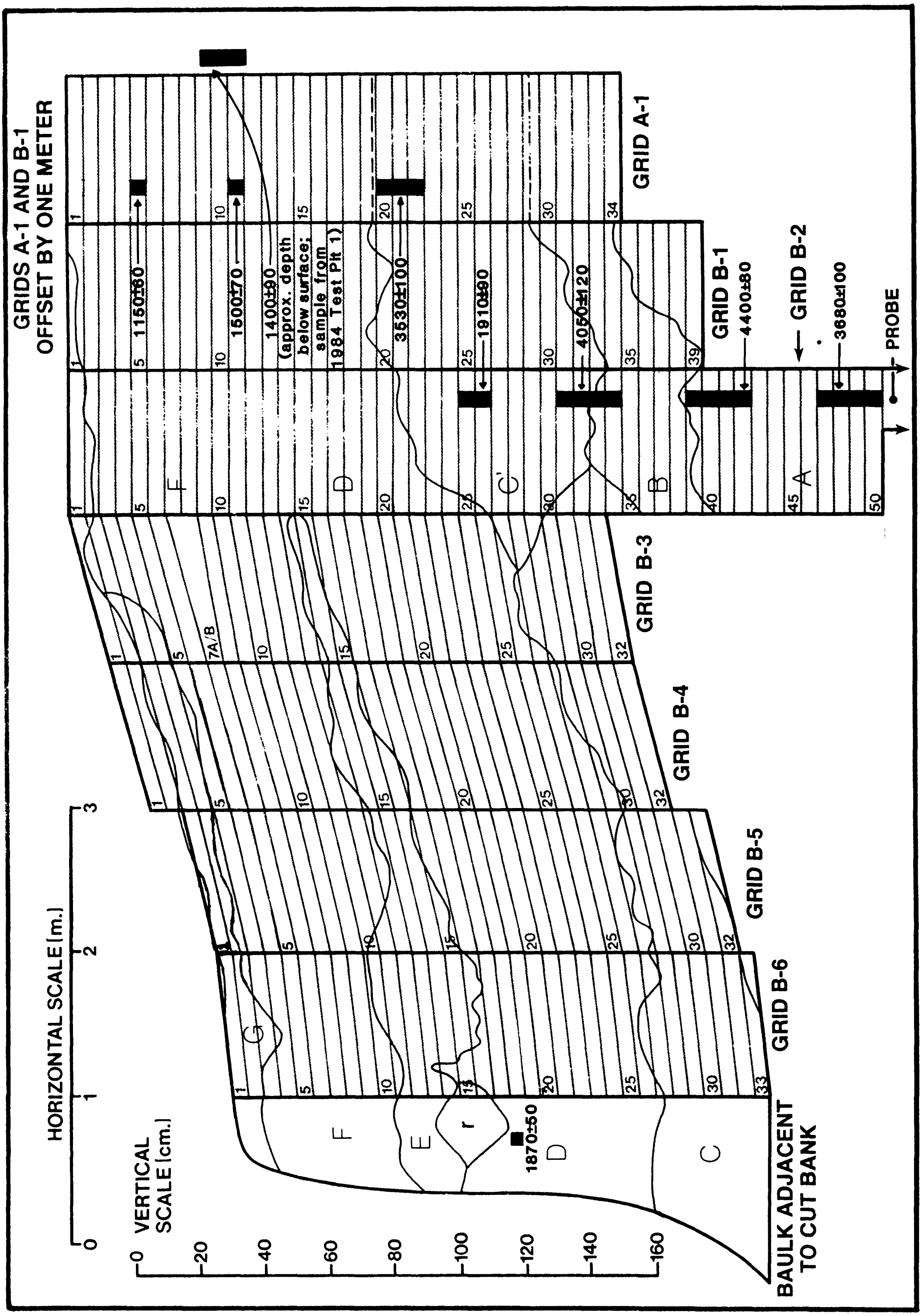


Figure 7. Schematic profile showing distribution of dated radiocarbon samples.

the period 2000-1000 B.P. was one of steady aggradation of alluvium, which corresponded temporally with the Audubon glacial advances in the higher part of the Front Range (Benedict 1968, 1973, 1981, 1985; Madole 1989: 286-287). Stratigraphic data indicate that, following the approximately 1500/2000 year depositional hiatus at Recon John Shelter and up until the most recent recorded occupation of the site (ca. 1000 B.P.), Turkey Creek was not incised in a channel, and deposition occurred across much of the valley floor. The paleoclimatic implications of these data are that summers were wetter and somewhat cooler than at present. The hiatus preceding this period at Recon John Shelter appears to correlate with general evidence along the Front Range for sediment excavation between ca. 3000 and 2000 B.P. (see review in Madole 1989: 277-284). The local paleoclimatic implications of this phenomenon are less certain.

Eight pollen samples in a stratigraphic column were extracted from dated units spanning the latter portion of the Late Archaic through Early Ceramic periods, encompassing approximately 1,000 years. No intact pollen samples were recovered from Middle Archaic deposits exposed a few meters to the east. Arboreal and nonarboreal pollen representing 37 plant taxa was identified. Relative pollen count frequencies, particularly Low-spine and High-spine components, grass, fir (*Abies*), and spruce (*Picea*), suggest that the climate during the period of record was slightly wetter and/or cooler than that of the present, and that conditions became cooler during the transition from the Late Archaic to Early Ceramic period.

Thirty plant taxa are represented in the macrobotanical samples, mainly by seeds, but also by pine cone and needle fragments, twig fragments, berries, cactus areolae, and corn cob fragments. Twenty of the taxa are indicative of probable or possible prehistoric plant use; all but one (maize) are wild taxa which are currently found in the general area, if not the immediate site vicinity. Most commonly represented are goosefoot (*Chenopodium*), portulaca (*Purslane*), and juniper (*Juniperus*). Maize is represented exclusively by individual cob cupule fragments, which produced no meaningful comparative data. Presence/absence data for 28 plant taxa recovered from fine-screened deposits in Grids A-1 and B-2, tabulated by major temporal period, are shown in Table 2.

The assemblage of plant remains from the site is indicative of an essentially modern flora. This is true of earlier as well as later levels from which samples were taken. A steady diminution in numbers of floral remains is evident with increasing depth of excavation, accompanied by a reduction in the variety of taxa represented. Notably, there are no wild taxa occurring in lower levels which do not occur in upper levels as well, and no upper level taxa whose absence from lower levels cannot readily be explained as a consequence of poor preservation or as part of the more general site phenomenon of decreased cultural evidence in the older sediments.

Some 13,600 bones and bone fragments were recovered from dated proveniences. The vast majority of the 13,600 dated items (97.3%) were recovered from fine water-screened matrix. Seventeen mammal taxa were identified, as were birds, fish, frogs/toads, and snakes/lizards. Gastropods were analyzed separately and are excluded from the present discussion. Faunal data tabulated by major temporal period are given in Table 3.

Nearly all identifiable mammal taxa from the site may be found in or near the area at present, or are known to have occurred in historic times, as is the case with bison. The faunal inventories from Late Archaic and Early Ceramic period deposits are more complete than that from the Middle Archaic. However, excavation in Middle Archaic deposits was relatively limited, and sampling error could account for the low species diversity. No taxa occur exclusively in Middle Archaic contexts. Faunal data thus indicate that major climatic changes did not occur during the occupation of the site, and that past climatic conditions were very similar to those of the present. The presence of *Sorex* cf. *nanus* (dwarf shrew) and *Microtus* cf. *pennsylvanicus* (meadow vole) may indicate slightly wetter conditions in the past than at present.

Table 2. Macrofloral Remains by Time Period (all remains are whole or fragmentary seeds, with the exception of *Zea mays*, which is represented by cob fragments.

	EARLY CERAMIC	LATE ARCHAIC	MIDDLE ARCHAIC	TOTALS
Amaranthus	57	2	--	59
Argemone	1	-	-	1
cf. Boraginaceae	2	-	-	2
Celtis reticulata	64	499	201	764
Chenopodium	2,112	177	19	2,308
Cleome serrulata	10	--	--	10
Compositae	7	4	1	12
cf. Cruciferae	1	1	-	2
Echinocereus	7	1	-	8
Euphorbia	21	2	--	23
Iva cf. xanthifolia	13	--	--	13
Juniperus/cf. Juniperus	23	11	5	39
Lactuca cf. scariola	1	-	-	1
Lappula cf. redowskii	1	-	-	1
cf. Malvaceae	5	-	-	5
Opuntia cf. polyacantha/Opuntia	58	5	8	71
Oryzopsis hymenoides/cf. O. hymenoides	6	10	18	34
Physalis	66	5	--	71
Pinus edulis/cf. P. edulis	6	1	1	8
Poaceae/cf. Poaceae	3	4	-	7
Polygonum/Rumex	3	-	-	3
Portulaca	68	1	--	69
Prunus virginiana	-	1	-	1
Rhus trilobata	6	6	7	19
Scirpus/Carex	1	1	-	2
Sporobolus cryptandrus	8	-	-	8
Verbena	1	-	-	1
Zea mays	4	5	-	9
Possible Zea mays	3	1	1	5
Unidentifiable	7	14	5	26
TOTALS	2,565	751	266	3,582

Table 3. Faunal Remains by Time Period.

	EARLY CERAMIC	LATE ARCHAIC	MIDDLE ARCHAIC	TOTALS
Indeterminate Mammal	1772	-	-	1772
Indeterminate Large Mammal	483	113	9	605
Indeterminate Medium Mammal	56	22	1	79
Indeterminate Small Mammal	4536	4005	1255	9796
Indeterminate Artiodactyl	123	26	-	149
Bison bison	9	-	-	9
Antilocapra americana	1	-	-	1
Odocoileus sp.	14	6	-	20
Indeterminate Carnivore	2	1	-	3
Lynx rufus	2	-	-	2
Canis latrans	5	1	-	6
Indeterminate Rodent	216	159	75	450
Microtus sp.	11	5	1	17
Microtus cf. pennsylvanicus	-	1	-	1
Neotoma sp.	28	16	1	45
Peromyscus sp.	1	1	-	2
Perognathus sp.	-	4	-	4
Thomomys sp.	19	14	1	34
Thomomys bottae	6	-	-	6
Cynomys ludovicianus	65	20	1	86
Spermophilus sp.	1	-	-	1
Indeterminate Leporid	49	5	3	57
Lepus sp.	76	34	5	115
Sylvilagus sp.	14	1	1	16
Sylvilagus audubonii	158	64	10	232
Sorex cf. nanus	1	-	-	1
Indeterminate Bird	10	2	1	13
cf. Crotalus	-	1	-	1
Indeterminate Snake	5	1	-	6
Indeterminate Frog/Toad	15	10	-	25
Indet. Reptile or Amphibian	28	12	1	41
Indeterminate Fish	4	1	-	5
TOTALS	7,710	4,525	1,365	13,600

Indeterminate Leporid = Sylvilagus/Lepus
Indeterminate Artiodactyl = Odocoileus, Antilocapra, Bison
Indeterminate Small Mammal = Shrew, mouse, ground squirrel, gopher, prairie dog, cottontail
Indeterminate Medium Mammal = Jackrabbit, fox, coyote, bobcat
Indeterminate Large Mammal = Deer, pronghorn, bison, bear, cougar

The more persuasive paleoclimatic evidence is geomorphic in nature, in large part because these studies were conducted along a lengthy segment of Turkey Creek as well as in the immediate site vicinity. The earliest and deepest cultural deposits are of Middle Archaic age and predate ca. 4000 B.P. Paleoclimatic implications of upper Unit 1 are uncertain; however, faunal and macrobotanical evidence suggest that animal and plant communities from this time are extremely similar to those represented in younger deposits at the site. Following a depositional hiatus of 1500 to 2000 years, aggradation began again ca. 2000 B.P. or a bit earlier and continued steadily until 1000 B.P., encompassing the latter Late Archaic and Early Ceramic periods. This interval of deposition resulted in formation of the lower part of geomorphic Unit 2. The most intense occupation of Recon John Shelter occurred during this time. Local data from Recon John Shelter and Turkey Creek valley suggest that the climate was generally wetter and cooler than at present during the Late Archaic and Early Ceramic occupation of the site (see also Olyphant 1985). Specifically, summers were wetter and cloudier and at least slightly cooler, and the likelihood for wet spring and fall snowstorms was elevated. In Turkey Creek valley, the stream was not incised as at present and it deposited alluvium widely across the valley floor during floods. Vegetation was more luxuriant at least on the valley floor and sides. Palynological data support geomorphic indicators of a generally wetter and/or cooler climate during the Late Archaic and Early Ceramic occupation of the site, and further suggest that conditions became cooler during the transition from Late Archaic to Early Ceramic. No evidence exists for radical Holocene departures in climatic conditions from those of the present; the flora and fauna represented throughout the occupation of the site are essentially modern.

ARTIFACTS AND FEATURE DATA

Artifacts

Three principal artifact categories – lithic (chipped/ground stone), ceramic, and bone – are represented at the site. The following discussion emphasizes major characteristics and temporal trends. More detailed descriptions of artifact analyses may be found in Kalasz et al. (1989).

Four thousand one hundred fifty-nine lithic artifacts representing two major classes (chipped stone, ground stone) and one poorly represented class (battered stone) were analyzed. One artifact, a spherical piece of sandstone (a so-called "boiling stone") is classified as miscellaneous. Four thousand eighty-four specimens comprising 98.2% of the lithic artifact assemblage are classified as chipped stone; this class is thus emphasized in the study of technological trends at Recon John Shelter. Three hundred eighty-three artifacts are not assignable to temporal divisions since they were recovered from cross-cutting strata. Therefore, 3,876 artifacts are utilized in the text and tables below to elucidate temporal changes (or lack thereof).

Debitage was initially sorted into two major size grades, large and small. Small size debitage was recovered from select proveniences where fill which passed through the standard 1/4 inch mesh was subsequently water screened through 1/16 inch mesh. Large size debitage is defined as specimens caught in the 1/4 inch mesh used to screen fill from all proveniences. The small size debitage is believed to represent mainly later stages of manufacture such as pressure flaking; large size debitage presumably results from a variety of reduction strategies and therefore was subjected to further sorting.

Large debitage was sorted into four categories by means of a "simple key of dichotomous technological attributes" (Sullivan and Rozen 1985: 759). The categories are summarized as follows: debitage without a discernible ventral or dorsal surface are termed debris; those with a ventral surface but no striking platform are termed flake fragments; those with a striking platform and a ventral surface but non-intact distal or lateral margins are termed broken flakes; and those with intact margins and a visible striking platform are termed complete flakes. It is inferred that complete and broken flakes are indicative of earlier stages of manufacture since the large, thick flakes produced, for example, through unintensive core reduction, are more likely to remain intact. Alternatively, debris and flake fragments are believed to represent mainly later stages of manufacture. Additional variables such as weight, platform characteristics, and cortical variability are measured on complete, or complete and broken flake, subsets to further clarify technological trends.

Classification and measurement of 2,426 large and 1,245 small debitage specimens assigned to discrete temporal periods is summarized in Tables 4 through 7. Table 4 provides a breakdown of the large debitage category percentages according to time period. Tables 5 and 6 focus on additional variables such as overall size and cortical measurements appropriate only for complete flakes, and platform measurements appropriate only for complete and broken flakes. Although recovered from limited contexts, small debitage is well represented (Table 7). High percentages of these specimens have intact platforms, a further indication that they resulted from pressure flaking rather than factors related to non-manufacture, such as post-discard trampling. The tables reveal that the debitage data associated with the respective temporal periods are remarkably similar, and are therefore indicative of a reduction strategy consistently employed throughout the term of site occupation. Table 4 demonstrates a fairly even distribution of debitage within the four categories, with broken flakes and debris having the highest associated percentages. In general, a variety of reductive tasks (e.g., unintensive core reduction, intensive core reduction, tool manufacture, and tool maintenance) was accomplished at the site.

The technological diversity inferred through debitage analysis is reflected by the 133 modfied chipped stone specimens. Sixty-seven (50.3%) represent a bifacial reduction strategy and 66 (49.7%) represent non-bifacial reduction.

Complete or nearly complete bifaces are sorted into 14 types based on size, flaking characteristics and the presence or absence of a stem (Kalasz et al. 1989: 126-149). Unstemmed bifaces (very large, large, medium, and small types) represent mainly unused implements discarded while in early or intermediate stages of reduction (Fig. 8). However, use-wear associated with the largest bifaces (Fig. 8A) suggests that they were utilized as hard hammer knapping implements. The two smallest unstemmed bifaces are inferred to represent a projectile point preform (Fig. 8I) and a scraping implement (Fig. 8J).

Stemmed bifaces are sorted initially into large, medium, and small categories (Fig. 9) based on a histogram displaying the collection's distribution according to overall size (Kalasz et al. 1989: Fig. 28). The three size categories are further broken into 10 types based on morphology. The largest projectile points (Fig. 9A-B) are similar to the Marcos style (Gunnerson 1987: Appendix I). Medium-sized projectile points exhibit considerable variability in stem or haft element morphology and are sorted into four types (Fig. 9C-F). Specimen D in Figure 9 resembles Category P24 points from southeastern Colorado (Anderson 1989b) and MM5 points from the Magic Mountain site near Golden, Colorado (Irwin-Williams and Irwin 1966); specimen C resembles Category P45 points from southeastern Colorado (Anderson 1989b); specimen F is comparable to Magic Mountain MM19 points (Irwin-Williams and Irwin 1966); and specimen E is similar to points which Campbell (1969: 99-101) identifies as Yarborough in southeastern Colorado. Small projectile points consist primarily of the ubiquitous, triangular, expanding stem style commonly referred to on the southern Plains as Scallorn (Fig. 9, G-S). Only a single stemmed biface from the site exhibits the distinctive shape of a typical Plains style T-shaped drill (not illustrated).

Significant temporal trends are observable in the stemmed biface collection. Five of six medium and large size projectile points are from Late Archaic contexts; just one medium-sized (Fig. 9E) and all 13 small points are from Early Ceramic contexts. No points were recovered from Middle Archaic levels. The larger Late Archaic points are relatively diverse morphologically, exhibiting a range in haft element styles and in overall shape. Conversely, Early Ceramic

Table 4. Debitage Type and Heat Alteration Frequencies by Time Period.

Debitage Type	Middle Archaic Count	Middle Archaic Col. Percent	Late Archaic Count	Late Archaic Col. Percent	Early Ceramic Count	Early Ceramic Col. Percent
Complete	11	18.0	226	21.8	252	19.0
Broken	22	36.1	303	29.2	378	28.5
Fragment	12	19.7	190	18.3	302	22.7
Debris	16	26.2	318	30.7	396	29.8
Totals	61	100.0	1037	100.0	1328	100.0
Heat-altered Specimens	6	9.8	91	8.7	141	10.6

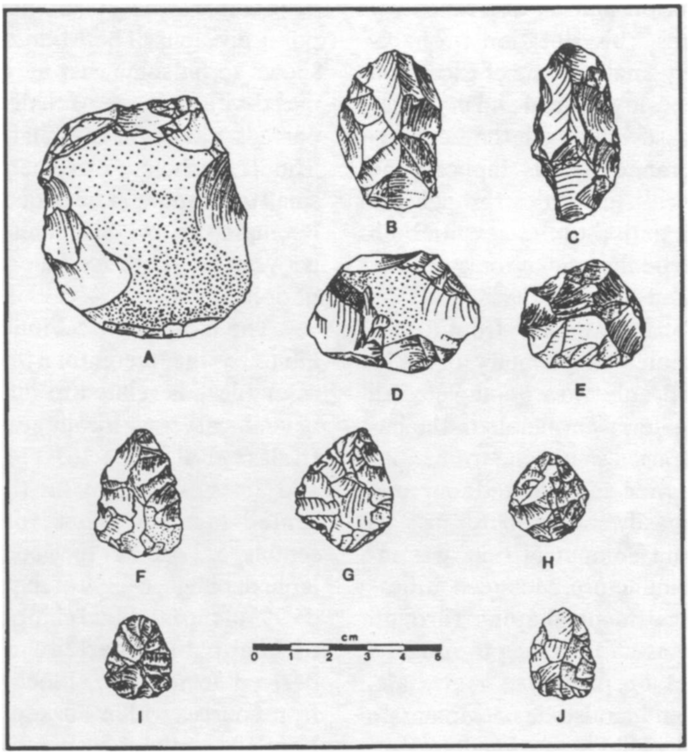


Figure 8. Unstemmed bifaces: A, very large; B-E, large; F-H, medium; I-J, small.

points are consistently triangular in outline and have expanding stems.

Nonbifacial chipped stone is sorted into four types based on origin (i.e., flake vs. cobble/nodule) and flaking characteristics (Kalasz et al. 1989: 115-126). In Figure 10A-C, non-bifacially flaked cobbles/nodules are illustrated. Chert, chalcedony, and petrified wood specimens are small and exhaustively reduced; they apparently functioned as cores. Quartzite and limestone examples are large and associated use-wear indicates that they may also have functioned as heavy-duty pounding/chopping tools. The remaining nonbifacial items are flake tools. Figure 10D-G, shows flakes with minimal edge modification. Illustrated in Figure 10H-L are tools that are unifacially thinned and edge modified to a greater degree than those described previously. These are more formalized, patterned tools which use-wear indicates functioned as scrapers.

Table 5. Complete Flake Data by Time Period.

	Middle Archaic n=11	Late Archaic n=226	Early Ceramic n=252
Mean Flake Length (cm)	1.80	2.10	1.86
Mean Flake Width (cm)	2.00	2.20	1.84
Mean Flake Thickness (cm)	0.40	0.50	0.42
Mean Flake Weight (g)	5.4	5.4	5.0
Number of Flakes with no Curvature	5 (45.5%)	128 (56.6%)	153 (60.7%)
Total Number of Cortical Flakes	8 (72.7%)	150 (66.3%)	162 (64.2%)

The distribution of chipped stone tools within the defined time periods is shown in Table 8. Only eight tools are associated with the Middle Archaic period and all are expedient flake tools or cores; this situation probably reflects the relatively small volume of excavated Middle Archaic deposits. Bifacial and non-bifacial tool subtotals associated with the Late Archaic and Early Ceramic periods duplicate the inferred technological similarities through the transition from one period to the next. In both of these periods, expedient flake tools are the most well represented.

The ground stone assemblage from Recon John Shelter is extremely fragmentary; of the 70 specimens recovered, only two are complete. All are derived from materials available in the immediate vicinity; exposed sandstone formations in Turkey Creek provide an unlimited source of slabs and blocks easily modified for use as metates. A minimum amount of time was invested in metate manufacture. Metate modification generally consists of shaping through flaking of the margins and pecking to roughen the grinding facet or pulverize materials. Various sandstone and sandstone conglomerate stream cobbles easily held in one hand are utilized as manos. Some are shaped extensively through pecking and are heavily utilized. Battering is common on manos and grinding is limited to a maximum of two surfaces.

Table 9 summarizes the distribution of the major lithic artifact taxa among the defined temporal divisions. The Middle Archaic period is shown to be somewhat anomalous when compared with the Late Archaic and Early Ceramic periods although any characterization of the Middle Archaic is extremely tenuous given the small tool sample. The data do, however, strongly emphasize overall technological similarities between the Late Archaic and Early Ceramic periods.

The morphological/functional diversity exhibited by the Recon John Shelter chipped stone assemblage is related to differential utilization of nonlocal versus locally available raw materials (Kalasz et al. 1989: 167-174). Chert, quartzite, and limestone are by far the most well represented material types within the lithic assemblage. Together they comprise 84.6% of the large debitage, 64.3% of the small debitage, and 66.9% of the modified chipped stone. Quantities of knappable quartzite and limestone are derived from large, blocky chunks available from sources within Turkey Canyon and nearby Booth Mountain. In contrast, the highly ambiguous chert designation may encompass more of the high quality imported materials such as Trout Creek/Upper Arkansas River chert.

Table 6. Platform Characteristics for Complete and Broken Flakes by Time Period.

	Middle Archaic n=33	Late Archaic n=259	Early Ceramic n=630
Mean Platform Length (cm)	0.88	0.99	0.88
Mean Platform Width (cm)	0.33	0.37	0.31
Number of Lipped Flakes	5 (15.2%)	51 (9.6%)	61 (9.7%)
Number of Flakes with Platform Abrasion	8 (24.2%)	126 (23.8%)	192 (30.5%)

Table 7. Summary of Small Sized Debitage by Time Period.

	Middle Archaic n=95	Late Archaic n=493	Early Ceramic n=666
Mean Flake Weight (g)	0.03	0.03	0.03
Number of Flakes with Platforms	40 (42.1%)	210 (42.6%)	257 (38.6%)

Chalcedony, petrified wood, obsidian, quartz crystal, and basalt, all from nonlocal sources, are minimally represented.

Figure 11 presents histograms displaying the distribution of large debitage percentages according to temporal division for chert and quartzite. While quartzite is skewed toward complete and broken flakes, chert tends to display higher percentages of debris. Again, this pattern remains consistent through time and is interpreted to indicate that chert is associated with intensive core reduction and the manufacture of finer bifacial tools to a greater extent than quartzite. Quartzite is thus inferred to represent primarily unintensive core reduction and the manufacture of heavy-duty tools.

These data provide the basis for a model of Late Archaic and Early Ceramic period chipped stone technology which is supported by additional correlations between artifact and raw material type. According to the model, occupants of Recon John Shelter obtained high quality materials such as chert (referred to locally as jasper) from the upper Arkansas River

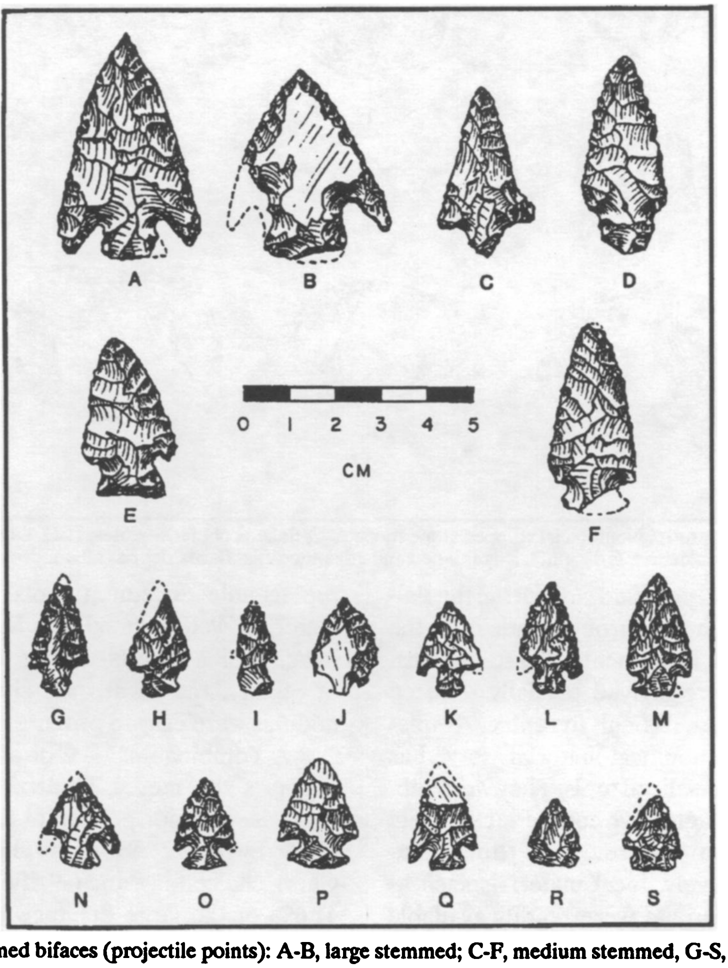


Figure 9. Stemmed bifaces (projectile points): A-B, large stemmed; C-F, medium stemmed, G-S, small stemmed.

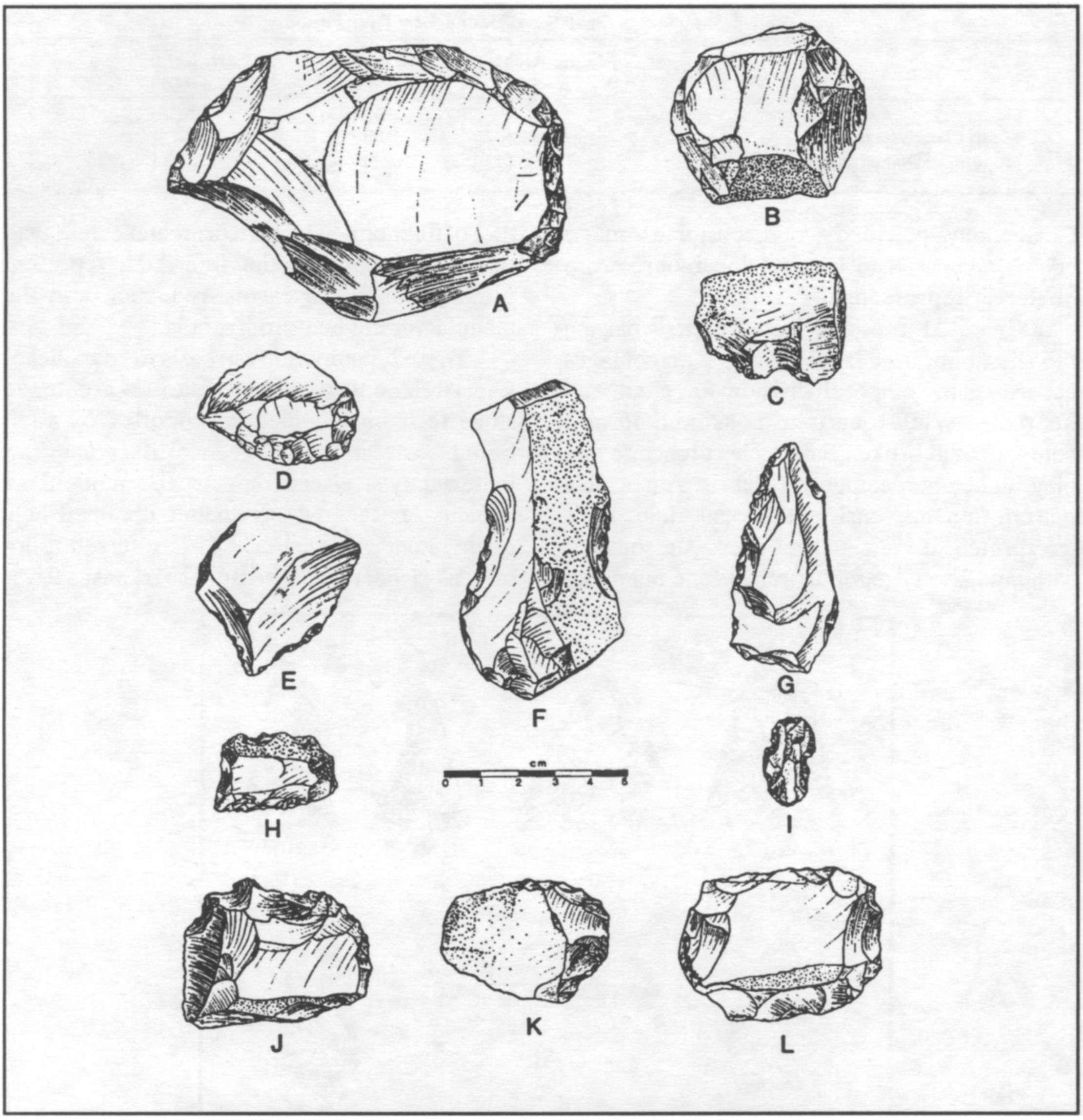


Figure 10. Nonbifacial chipped stone tools: A-C, flaked cobbles/nodules; D-G, edge modified flakes/debris; H-L, unifacially thinned and edge-modified flakes/debris (all unnotched except I).

area to the west and petrified wood from the Palmer Divide to the north through trade or in the course of seasonal movements. These nonlocal specimens therefore arrived partially reduced or finished and were difficult to replace. Implements made from nonlocal materials served as highly curated, specialized tools. They were subjected primarily to intensive core reduction, late stage biface manufacture, and tool maintenance. Alternatively, local materials such as limestone and quartzite were readily available for unintensive reduction into a variety of easily replaceable expedient tools. Thus, the local materials were formed into heavy-duty pounding/chopping and flake tools. Although poorer in quality, the local quartzite and limestone nodules were easy to procure.

A combination of tool and debitage data supports the model. Quartzite and limestone comprise a major portion of the large debitage (51%) but only 21.8% of the chipped stone tools. Chert, chalcedony, and petrified wood comprise 41.6% of the large debitage but 75.2% of the chipped stone tools. Within the small debitage

Table 8. Distribution of Modified Chipped Stone Tool Types by Time Period.

	Middle Archaic		Late Archaic		Early Ceramic		Unknown		Totals	
Incomplete Bifaces	0		9	(20.9%)	15	(19.5%)	2	(40%)	26	(19.5%)
Incomplete Stemmed Bifaces	0		2	(4.7%)	6	(7.8%)	0		8	(6.0%)
Complete Stemmed Bifaces (Types 9-18)	0		8	(18.6%)	10	(13.0%)	1	(20%)	19	(14.3%)
Complete Unstemmed Bifaces (Types 5-8)	0		3	(7.0%)	10	(13.0%)	1	(20%)	14	(10.5%)
Nonbifacial Cobbles/Nodules (Type 1)	5	(62.5%)	5	(11.6%)	4	(5.2%)	1	(20%)	15	(11.3%)
Nonbifacial (Type 2)	3	(37.5%)	15	(34.9%)	26	(33.8%)	0		44	(33.1%)
Nonbifacial (Types 3 and 4)	0		1	(2.3%)	6	(7.8%)	0		7	(5.3%)
Biface Subtotal	0		22	(51.2%)	41	(53.2%)	4	(80%)	67	(50.3%)
Nonbifacial Subtotal	8	(100%)	21	(48.8%)	36	(46.8%)	1	(20%)	66	(49.7%)
Totals	8	(100%)	43	(100%)	77	(100%)	5	(100%)	133	(100%)

collection assumed to represent late stage manufacture, quartzite comprises only 19.1% of the overall sample. Petrified wood, which is definitely of nonlocal origin, in contrast comprises only 2.1% of the large debitage but 21.0% of the small debitage sample. Additionally, quartzite and limestone make up 31.8% of the nonbifacial tools but only 11.9% of the bifacial tools. In contrast, chert, chalcedony, and petrified wood comprise 66.6% of the nonbifacial tools and 82.1% of the bifaces. Perhaps more telling evidence is associated with the most finely crafted examples of chipped stone tools. Of the 19 projectile points, just one is of quartzite; the remainder are of chert, chalcedony, or petrified wood.

Twenty-one potsherds were recovered. Three categories are defined, among which attributes of paste and temper, color, and surface finish overlap greatly. Because of the virtual absence of complete vessels and the limited number of rim sherds (2), overall vessel form cannot be estimated. It may be inferred that most or all vessels were jars, however, given that surface decoration is confined mainly to sherd exteriors. All three categories are characterized by exterior surface cord-marking. Distinguishing attributes among categories are incisions over the cord-marking on the exterior surface, and temper composition, texture, and percentage of paste volume. Examples of the three ceramic categories are illustrated in Figure 12. Descriptive data for the 19 classifiable sherds are summarized in Table 10.

All but four sherds were recovered from Early Ceramic period levels in Strata F and G. Two are from the upper part of Stratum E and were probably introduced by rodents. Two sherds from deeper levels in Stratum D, which were found in the same excavation grid and separated vertically from one another by about 10 cm, may have been moved downward as a result of rodent activity. Thus Stratum E, a sterile flood deposit dated to sometime between ca. A.D. 80 and 550, serves as an approximate vertical boundary between aceramic and ceramic site occupations. No temporal trends are observable within Early Ceramic period deposits among the three identified ceramic categories.

Seventeen modified bone objects were recovered, of which twelve are beads fashioned from small mammal bone. The remaining five are an awl tip, a possible awl base fragment, and three miscellaneous worked bone objects of uncertain function. Ten of twelve beads, the awl tip and possible base, and one miscellaneous artifact are from Early Ceramic contexts. One bead is from a level that spans the Late Archaic-Early Ceramic boundary. One each of the remaining items is from Late Archaic and Middle Archaic levels. Although the modified bone sample size is far too limited to permit inferences about long-term temporal changes in tool style or function, the data do suggest that the manufacture and use of bone beads did not become commonplace until the Early Ceramic period.

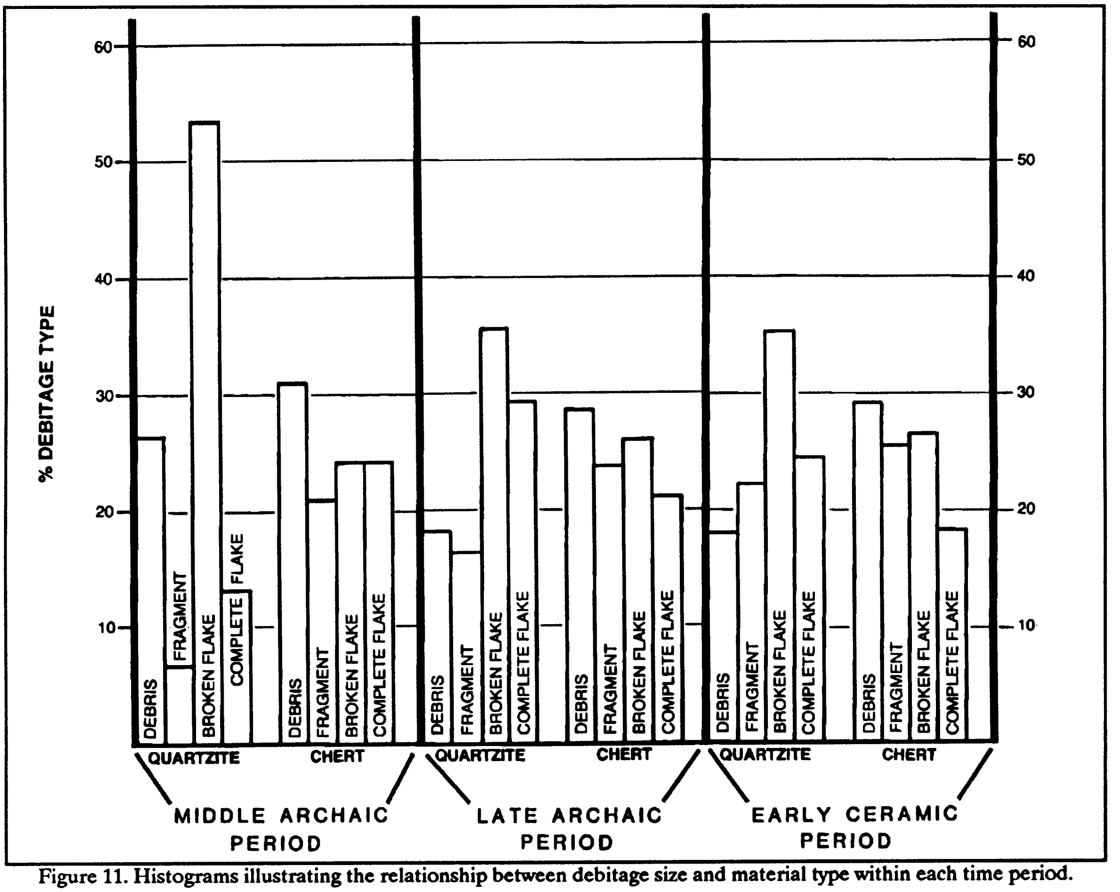


Figure 11. Histograms illustrating the relationship between debitage size and material type within each time period.

Features

Eleven features were identified, of which six are *in situ* hearths or probable hearths. One of these six was noted eroding from the stream bank at the west edge of the site and was not excavated. The five remaining features are believed to be concentrated secondary hearth debris and are not discussed further.

Hearths display a morphological range and an overall lack of formality of design. They consist of burned rock concentrations or scatters, with or without associated ash stains and charcoal, occupying a shallow pit or resting on a plane. One hearth consists of a basin-shaped pit, containing burned rock, positioned at the foot of a large, deeply tilted roof fall slab. A portion of the slab is burned. A probable vertical post hole remnant was identified in another hearth, surrounded by a charcoal stain and burned rock. Hearths without exception are associated with debitage and charred wild plant remains (mainly seeds) in varying amounts. Occasional lithic tools and bone are also associated. In general, the composition of artifactual and nonartifactual remains found in association with hearths differs little from that of the excavated deposits elsewhere, and densities of such materials are not markedly higher.

Just one of six hearths, the unexcavated feature exposed in the stream bank, is of probable Early Ceramic age. Three occur in Late Archaic contexts, and two at the Middle Archaic/Late Archaic boundary. Because the two latter features include pits, it is likely that both are of Late Archaic age.

SYNTHESIS: CULTURAL CHANGE AND CONTINUITY AT RECON JOHN SHELTER

Radiometrically derived ages (calibrated) represent a temporal span of ca. 3000 B.C. to A.D. 1000 at Recon John Shelter. Middle Ar-

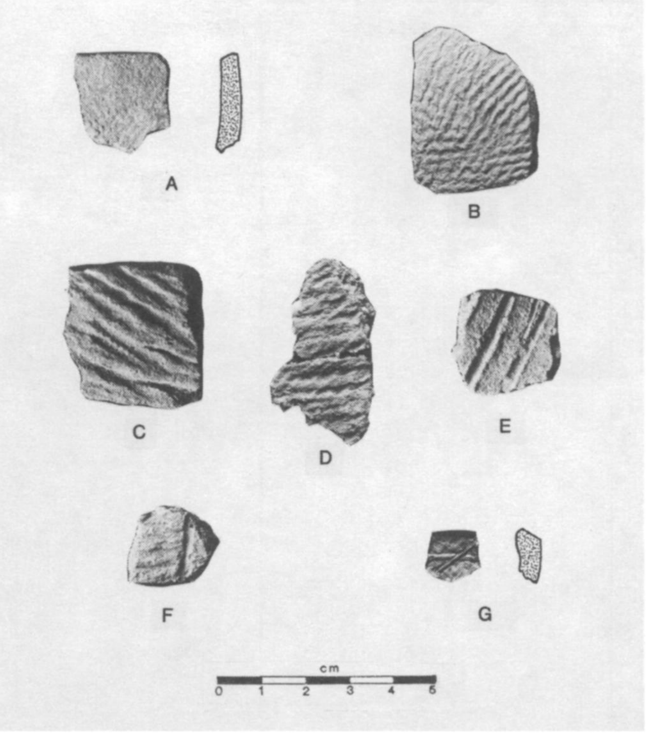


Figure 12. Ceramics: A-C, Category 1; D-F, Category 2; G, Category 3. Rim sherd profiles are shown for A and G.

chaic, Late Archaic, and Early Ceramic period deposits are present. Occupation was by no means continuous, and a depositional hiatus of up to 2000 years duration is apparent in the latter portion of the Middle Archaic and early-to-mid portion of the Late Archaic period. The latter part of the Late Archaic period and virtually the complete span of the Early Ceramic period are represented; thus, the so-called Archaic-Woodland transition of the first few centuries A.D. is present archaeologically. Densities of artifacts, as well as faunal and macrofloral remains, increase steadily through time in the stratigraphic sequence, suggesting progressively intensive occupation. This notion is supported by gastropod data which show that species diversity decreases through time while the total density of individuals increases—both trends being indicators of a microenvironment that was progressively disturbed and artificially enriched by man's presence (Anderson et al. 1989: 262-270).

A hunting-gathering economy focusing on small mammals and a few preferred wild plant species is inferred on the basis of faunal and macrofloral data. Using evidence of burning or scorching of bone as the main criterion of cultural use (as opposed to occurrence as natural death assemblages), *Cynomys ludovicianus* (blacktail prairie dog) and assorted leporids (*Sylvilagus audubonii*/desert cottontail, *Lepus* sp./jackrabbit) are inferred to be of relatively high economic importance. The very high proportion of burned or scorched, indeterminate rodent and miscellaneous small mammal bone fragments, in comparison to numbers representing large mammals, further suggests an emphasis on small animal resources. Of 29 wild plant taxa identified in the deposits only a few are frequent occurrences: goosefoot (*Chenopodium* sp.), hackberry (*Celtis reticulata*), portulaca (*Purslane* sp.), prickly pear (*Opuntia*), ground-cherry (*Physalis*), pigweed (*Amaranthus*), and juniper (*Juniperus* sp.). Goosefoot and hackberry in particular are abundant, indicating intensive and prolonged use as food sources. Significantly, temporal trends in

Table 9. Major Lithic Artifact Taxa Broken Down by Time Period.

	Middle Archaic			Late Archaic			Early Ceramic			
	Freq.	Rowpct.	Colpct.	Freq.	Rowpct.	Colpct.	Freq	Rowpct.	Colpct	. Total
Large Debitage	61	2.5	35.7	1037	42.7	64.3	1328	54.7	63.5	2426
Small Debitage	95	7.6	55.5	493	39.3	30.56	666	53.1	31.8	1254
Modified Chipped Stone	8	6.2	4.7	43	33.6	2.7	77	60.2	3.7	128
Ground Stone	6	9.4	3.5	37	57.8	2.3	21	32.8	1.0	64
Battered Stone	1	25.0	0.6	3	75.0	0.2	0	0	0	4
Totals	171	4.4	100.0	1613	41.6	100.0	2092	54.0	100.0	3876

Table 10. Ceramic Category Attribute Summary.

CATEGORY	NO. SHERDS	SURFACE TREATMENT EXTERIOR	SURFACE TREATMENT INTERIOR	SHERD THICKNESS	PASTE	COLOR	RIM CHARACTERISTICS
1	10 (1 rim)	Cord-marked, deep (1.9 mm) to nearly obliterated; cords 2-ply S-twist; arrangement parallel to multi-directional, at intervals of 0.8-4.0 mm	Tactually smooth, usually with anvil (finger-nail?) impressions	4.2-8.3 mm, avg. 5-6 mm	Homogeneous, dense; 20-40% is temper, of crushed granitic rock and possible stream sand; avg. temper diameter, <1 mm; mica flecking, possibly residual component of clay	Sherd cores: black to dark brown; surface rinds: dark reddish gray to brown	Direct, slightly inverted at 30-degree angle; lip rounded and slightly flattened toward interior; undecorated
2	5 (0 rims)	Cord-marked, moderately to heavily obliterated; cords 2-ply S-twist where discernible; arrangement generally parallel, at intervals of 2.2-2.4 mm. Some surfaces exhibit deep incisions	Tactually smooth, with wiping striations and distinct anvil impressions	4.5-9.5 mm, avg. 5-6 mm	Uneven, compact; 20-80% is temper, of quartz, hornblende; avg. temper diameter is coarse, 2-3 mm	Wide range, black to brown to light grayish brown	---
3	4 (1 rim)	Cord-marked, slightly to heavily obliterated, cords 2-ply S-twist where discernible; arrangement parallel to random, at intervals of 1.3-2.4 mm. All cord-marking over-incised	Tactually smooth with wiping striations	4.7-6.4 mm, avg. 5.3 mm	Uneven, compact; 10-45% is temper, of crushed granitic rock; avg. temper diameter, 0.5-0.9 mm	Black to very dark gray to brown	Single small rim, probably direct incurving

animal and plant exploitation are not discernible.

Maize cob fragments in limited numbers were retrieved from Late Archaic and Early Ceramic period contexts, and maize pollen was found in trace amounts from one Early Ceramic sample. It appears on this basis that Recon John Shelter has a long but very unintensive history of maize use that spans the Late Archaic-Early Ceramic period boundary. Animal and wild plant foods continued to be exploited in largely unchanged patterns up to the time of site abandonment. Minnis (1985) has recently called attention to the phenomenon of "primary crop acquisition" by Archaic groups in the Greater Southwest, i.e., the adoption of fully developed domesticates by people who did not actually develop them. He notes that early plant cultivation was easily integrated into the Archaic economy, and that such integration may have occurred not in response to a need for dietary supplements, but as insurance against failure of more conventional food sources (hunted game, collected wild plants). Minnis' concepts merit further scrutiny in southeastern Colorado in the light of data from Recon John Shelter.

Material culture technologies are generalized and extremely local in focus. Although projectile points are highly formalized, most other tool forms are not. Expedience in manufacture is apparent in most classes of tools, and many items are of probable local derivation. A dearth of trade goods throughout the record of occupation suggests that lively interaction with neighboring regions, e.g., the northern Southwest, did not occur. The Archaic-Woodland transition did witness a stylistic and technological shift from large to small projectile points, the result of introduction of the bow and arrow. The persistence of large Late Archaic-like point forms well into the Early Ceramic period at Recon John Shelter and elsewhere in the region indicates a reluctance to forsake the atlatl and dart, and suggests that approaches to animal procurement were not completely altered by technological innovation. Pottery first appears in the Early Ceramic period, perhaps in the ca. A.D. 500-600 interval, but is only sparsely represented at the site.

The occupation of Recon John Shelter can be said without contradiction to have been characterized by both continuity and change. At a fundamental level—that of subsistence—the record is one of stasis and apparent adaptational stability. To simply characterize the long occupation span in hunting/gathering economic terms, however, is to understate the remarkable stability in local exploitation patterns. Animal and plant resource exploitation, lithic material procurement, tool manufacture and use—all exhibit little or no detectable change over a period of several millennia. Small climatic changes seem to have occurred during this time span, but major shifts, of the type that might have effected significant human responses, did not. Technological changes did take place; however, in adaptational terms they are best viewed as an overlay which affected basic modes of subsistence but little. The Late Archaic-to-Early Ceramic period transition as exemplified by Recon John Shelter was a phenomenon strictly technological in scope and limited at that.

Michlovic's (1986) challenge to long-standing views of Plains evolutionism is referred to in the introductory paragraphs. According to his view, plains prehistory is characterized not by progressive and inevitable change, but rather by adjustments to exterior stimuli that did not affect, or were not reflected in, existing technological or socioeconomic systems. By this thesis, economic exploitation practices varied around a long-term hunting/gathering theme. Artifact changes were mainly stylistic in nature and cultural groupings changed little. Michlovic's argument extends to the Early Ceramic (Woodland) period as well as the Archaic periods.

In the occupation record of Recon John Shelter this thesis finds considerable support (see also Gilmore 1989: 25). There is indeed evidence of technological change through time, although even this phenomenon is limited to certain tool classes. General modes of adaptation did not evolve in ways measurable archaeologically. Considering its longevity, such an adaptation can be regarded as successful, if not dynamic.

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