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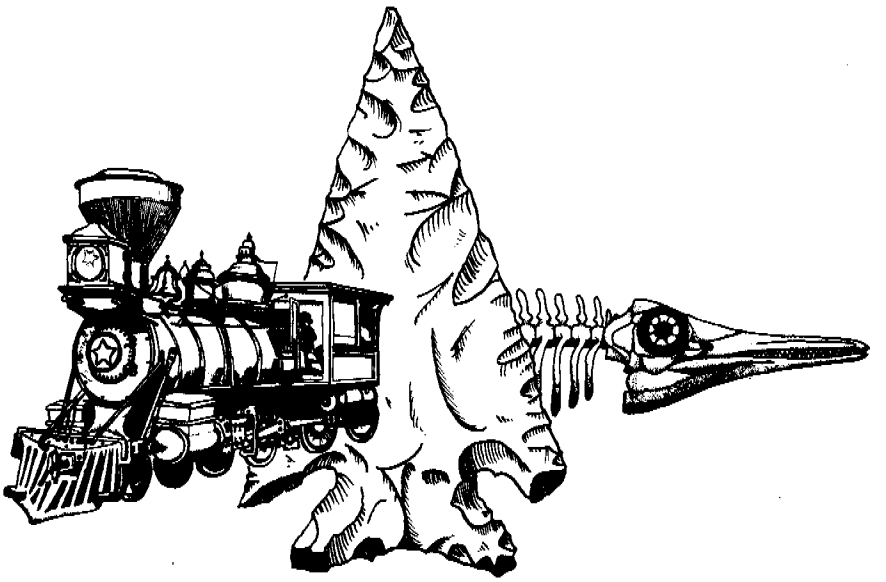

The SOUTH FORK SHELTER SITE REVISITED

Excavation at Upper Shelter, Elko County, Nevada

Lee Spencer
Richard C. Hanes
Catherine S. Fowler
Stanley Jaynes

CULTURAL RESOURCE SERIES No. 11
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THE SOUTH FORK SHELTER SITE REVISITED:

EXCAVATION AT UPPER SHELTER, ELKO COUNTY, NEVADA

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August, 1987

FORWARD

The Upper South Fork Shelter was selected as a location for testing during the spring of 1985 in order to assess the effects of vandalism, as well as to determine the integrity of the remaining content of the site. The project was initiated and funded through the Nevada BLM Cultural Resource program.

The results yielded a surprising variety of artifactual material and completeness of archaeological record for the past 7000 years. Evidence demonstrating such preservation of regional prehistoric occupation is rare indeed, and will serve as a model and as baseline data for future studies of regional prehistory. The Upper Shelter/ South Fork Shelter Site clearly meets the criterion for conservation for future use. It is unusual due to the scarcity of other known sites of such singular importance. It merits preservation until the scientific and technological advances make the site an appropriate object of consideration for further research into the prehistory of the region.

The artifacts retrieved from the study are curated at the Anthropological Research Museum at the University of Nevada, Reno. Complete and detailled data on the testing program is maintained at the Elko District BLM Office.

Lynda L. Armentrout
Bureau of Land Management
Reno, Nevada

September, 1987

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Acknowledgements

Upper Shelter is one of those sites for which there is more than meets the eye upon initial inspection. This happy discovery is accompanied by the sobering reality of more data to handle than expected and the responsibility to disseminate the newly gained information. As is often the case, much volunteer work went into the completion of the project. Space does not allow us to list all of those who helped, however we would like to express our appreciation to the following for their assistance. Eva Nicholson, of Lamoille, energetically assisted with the field work. Without her sharp eye and energy much that was accomplished would not have been. Gary Foulkes, Fred Frampton, Tim Murphy, and Bob and Edna Whitehorn also contributed their own time in helping with the excavation. Intermountain Research loaned some necessary equipment. Frank Norrick, David Harrod, and Gene Prince of the Lowie Museum, University of California, Berkeley, assisted in retrieving archaeological materials excavated in 1959 from Upper Shelter and helped recall some details of the earlier excavation. Steve Brooks, Paula Peterson, Keith Katzer, and Caty Clifton contributed their advice and assistance in evaluating the physical deposits of the shelter. Max Pavesic and Mark Plew, both of Boise State University, and Robert Elston, Intermountain Research, provided comments on an earlier draft of this report. And finally, Tim Hartzell, Manager for the Elko Resource Area of the BLM Elko District, provided the necessary support for the project to successfully achieve its goals. As usual, the authors solely remain responsible for the content of this report.

Chapter 1. INTRODUCTION

South Fork Shelter holds an important position in the history of Great Basin archaeology for the chronological and dietary information it provided early in the regional research (Heizer et al. 1968). During the second field season at South Fork Shelter, a test trench was also placed in Upper Shelter, located only 200 feet away, further upslope from the South Fork river bed (Fig. 1). Although Upper Shelter demonstrated a greater propensity for offering perishable artifacts than lower South Fork Shelter, the lower density of artifact yield--in particular projectile points and the "startling lack of chippage and shell"--caused the University of California field party to dismiss the shelter as unworthy of further work. Upper Shelter was described as possibly representing a cache cave or a catchment for population overflow from the lower shelter, particularly in later times (Heizer et al. 1968:34).

Upper Shelter appeared to remain intact from that time until the fall of 1984 when the site was severely vandalized.[1] During the spring of 1985, test excavations were undertaken by BLM archaeologists with the aid of volunteers. The testing program was designed to assess the effects of vandalism as well as determine the character and integrity of the remaining deposit. The project was initiated and funded through the Nevada BLM Cultural Resource Program. Results of this testing indicate that Upper Shelter offers far more to the prehistorian than was concluded by the earlier investigators. In fact, Upper Shelter likely surpasses South Fork Shelter in terms of both variety of artifactual materials preserved and length of occupational record.

Setting

Upper Shelter lies on the southern aspect of a limestone cliff which forms the canyon mouth of the South Fork of the Humboldt River (Fig. 2). The South Fork is a perennial drainage providing 25% of the water in the Humboldt River basin above Carlin, Nevada (Donn Siebert, personal communication 1985). At an elevation of 5100 feet, the slope below the shelter contains big sagebrush, rabbitbrush, cheatgrass, and Great Basin wild rye grading into the willow and sedges of the riparian zone along the bank of the South Fork.

Juniper is present on the upper slopes of the Elko Hills above the shelter. Though only a few fish bones were noted in the deposit, fish are plentiful in the South Fork as well as in the Humboldt River a few miles away. Fresh water mussels are also available in the South Fork today as they were in the past. The Humboldt Valley and general Elko area are relatively fertile as noted by Steward (1938: 153), containing root and seed foods as well as large and small game. Steward (1938: 155) also noted the occurrence of a major ethnographic village site in the vicinity of the shelter.

[1] South Fork Shelter itself was severely disturbed in 1981 by illegal gravel procurement and has since been fenced and stabilized by BLM. Subsequent references to the affect that it is totally destroyed are incorrect. Also, both sites are on public land and always have been, contrary to the original site report information.

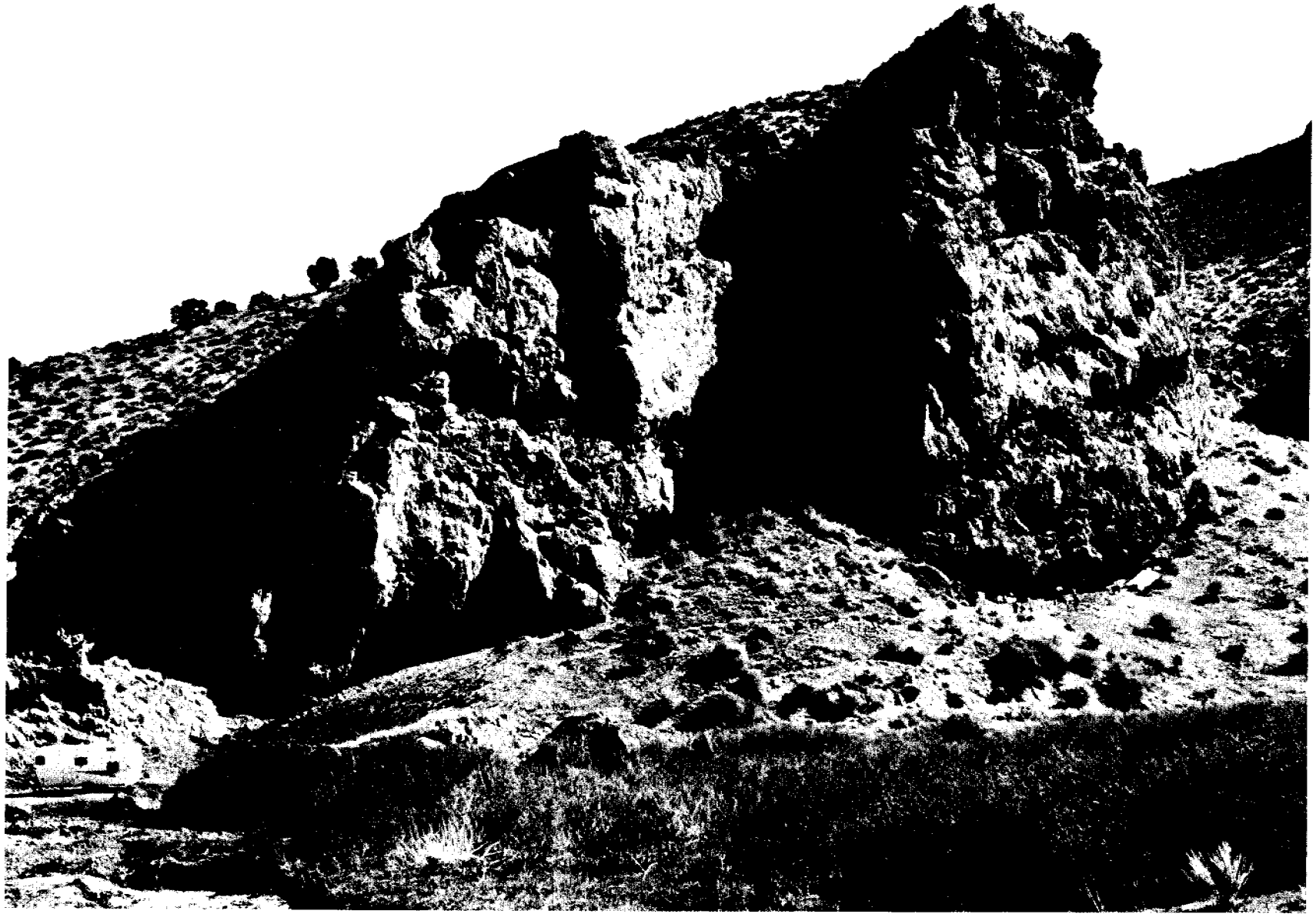


Fig. 1. Photograph of South Fork Shelter (to left of center of photo) and Upper Shelter (to right of center of photo).

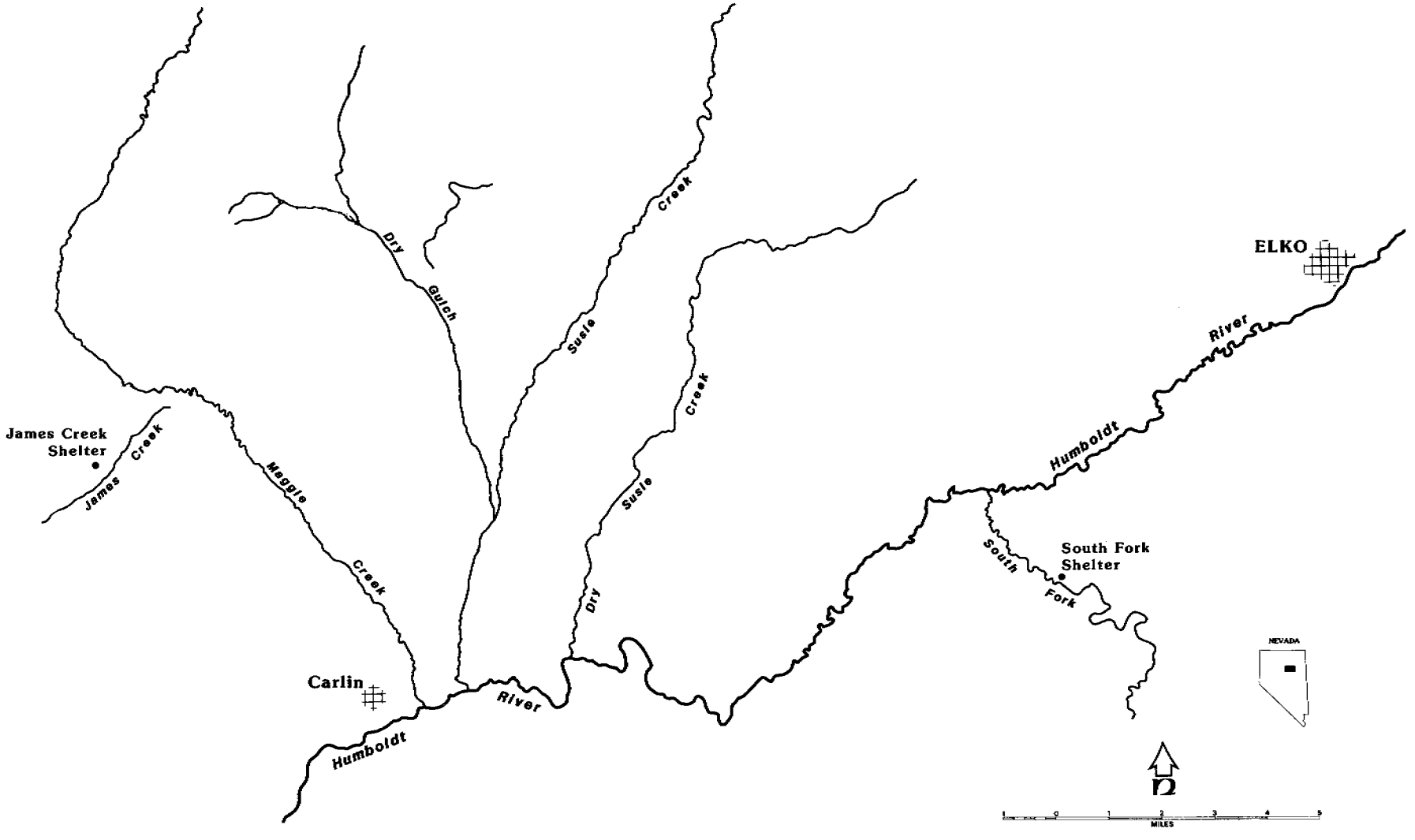


Fig. 2. Regional map of the South Fork Shelter Site location.

Previous Excavations at South Fork Shelter

Two trenches were excavated at lower South Fork Shelter in 1958 and 1959, reaching a depth of 120 inches by 6 inch arbitrary levels. Three radiocarbon dates obtained on charcoal are 4360 B.P. from the 120" level, 4310 from the 94-100" level, and 3320 B.P. at the 72" level. As a result, excavation indicated that the site was first occupied about 4300 B.P. and continued into the protohistoric period.

The main objective of the project was the recovery of projectile points to establish a chronology for the region. Of 69 points recovered, 67 were considered classifiable. The different styles represented included Humboldt series, Pinto, Elko series, Eastgate Expanding Stem, and Desert series. A vertical patterning of point styles was noted, with primarily Elko series styles, in addition to Humboldt and Pinto below the 30" arbitrary level, and Eastgate and Desert series forms above. Also, a pattern in occurrence of material types was observed, with four of the five obsidian points being found below the 30" level. An estimated date of 1350 B.P. was made for the apparent transition point.

Other modified chipped and groundstone includes bifacial knives and blanks, cores, drills, unifacial scrapers, manos and metates, and a possible pestle fragment. A total of 110 late stage bifaces ("knives") were recovered, primarily below the 30" level. Three of four drills and five early-stage blanks, or what was considered to be perhaps heavy cutting or chopping tools, were found in the later levels. Over 50 unifacially trimmed flake tools and 21 cores were apparently found throughout the fill. In regard to non-chipped stone implements, over 20 manos (and/or hammerstones) and only 3 metate fragments were found. Most of the former were in earlier deposits; whereas, two of the metate fragments were above the 30" level.

Non-lithic artifacts include bone awls and tubes, ceramic sherds, and a twined basketry fragment. The bone items were recovered primarily below the 30" level. The 12 ceramic sherds included 10 oxidized reddish to dark brown fragments from the 6-18" levels and 2 unoxidized gray ware sherds from below the 36" level.

Faunal evidence suggested a shift in emphasis from large mammals to shellfish through time, with all mammals, except cottontail rabbits, decreasing sharply above the 30" level. Some species disappeared altogether in the upper portions of the deposits.

A wide variety of materials were removed from Upper Shelter in 1959. Projectile point styles, represented by nine specimens, generally ranged in vertical order of Pinto, Elko series, Eastgate, and Cottonwood from bottom to top. Other lithic forms included biface blanks and knives, a drill, unifacially flaked tools, a core, a grooved pebble, and a mano. More perishable items were recovered from Upper Shelter than from the lower shelter. Seven items included a peeled and tied stick, S-twist 2-ply cordage, 2-ply rope, a coiled basketry fragment, a basketry handle, a pointed stick, and a piece of phragmites with sagebrush bark. Two worked bone splinters were also found. The majority of these items were discovered in roughly what has been identified in this report as Zone II.

The original South Fork Shelter report (Heizer et. al. 1968) lacked a site map locating the 1959 Upper Shelter test units, lacked a statement of the reason excavation was terminated and the depth excavated to, and lacked wall profiles or a discussion of the stratigraphy. Because of these shortcomings, the recent testing strategy resembled that of other sites which had not been formally investigated before. One option was to test for deeply buried deposits using as a starting point the floor of the 1959 test unit. As described in the following section, this approach proved futile.

To alleviate some of the difficulties of the report a trip was made to the Lowie Museum of Anthropology at Berkeley to view Upper Shelter collections, field notes, and photographs. However, the sorting of the late Dr. Heizer's papers was not yet completed and the field notes and photographs of this and other sites were yet to be located. It was discovered that the collection of artifacts from Upper Shelter contained several artifacts not reported in the site report. These include a Promontory peg of unknown provenience; a highly modified spatular bone object; a very large shouldered and stemmed projectile point from the deeper levels; an Eastgate projectile point from a higher provenience; an Elko point base of unknown provenience; a piece of S-twist 2-ply knotted cordage from the upper deposits; and, a bone awl fragment made on a large mammal bone. This report focuses on materials recovered from the more recent investigations. A more thorough study of all of the artifacts from Upper Shelter should be made in future investigations of the site.

Procedures

Field

Three site datums were established because of the steep slope in front of the shelter. A main datum (D1) was placed five meters out from and south of the shelter formation wall in proximity to the central portion of the culture-bearing deposits. This established a zero reference elevation point for subsequent excavation levels, site contours, and stratigraphy reconstructions. A second datum (D2) was established five meters northeast of and 1.29 meters above the main datum. A third datum (D3) was established about 22 meters northwest of and 3.63 meters above the main datum. Aluminum T-angle bar was used for datum stakes. A baseline was extended roughly east-west from D2 parallel to the formation face and inside the shelter drip line. Project north was thus oriented 20° west of true north. All test units were located by triangulation off this baseline. A site map was then made with a 50 cm contour interval (Fig. 3).

Prior to systematic excavation, an attempt was made to locate and clean out one of the 5 x 5 ft. 1959 test units. It was planned that from the bottom of this test unit another 1 x 1 meter test unit was to extend into undisturbed deposits. This strategy was soon abandoned because of difficulty in locating the 1959 trench. By the end of the field work the earlier trench was possibly discovered, but identification was still not positive. Two depressions west of the main vandal trench were initially thought to represent the subsided 1959 test trench, however they are likely vandal pits or disturbance of some other origin perhaps reflecting activity at the site historically. The

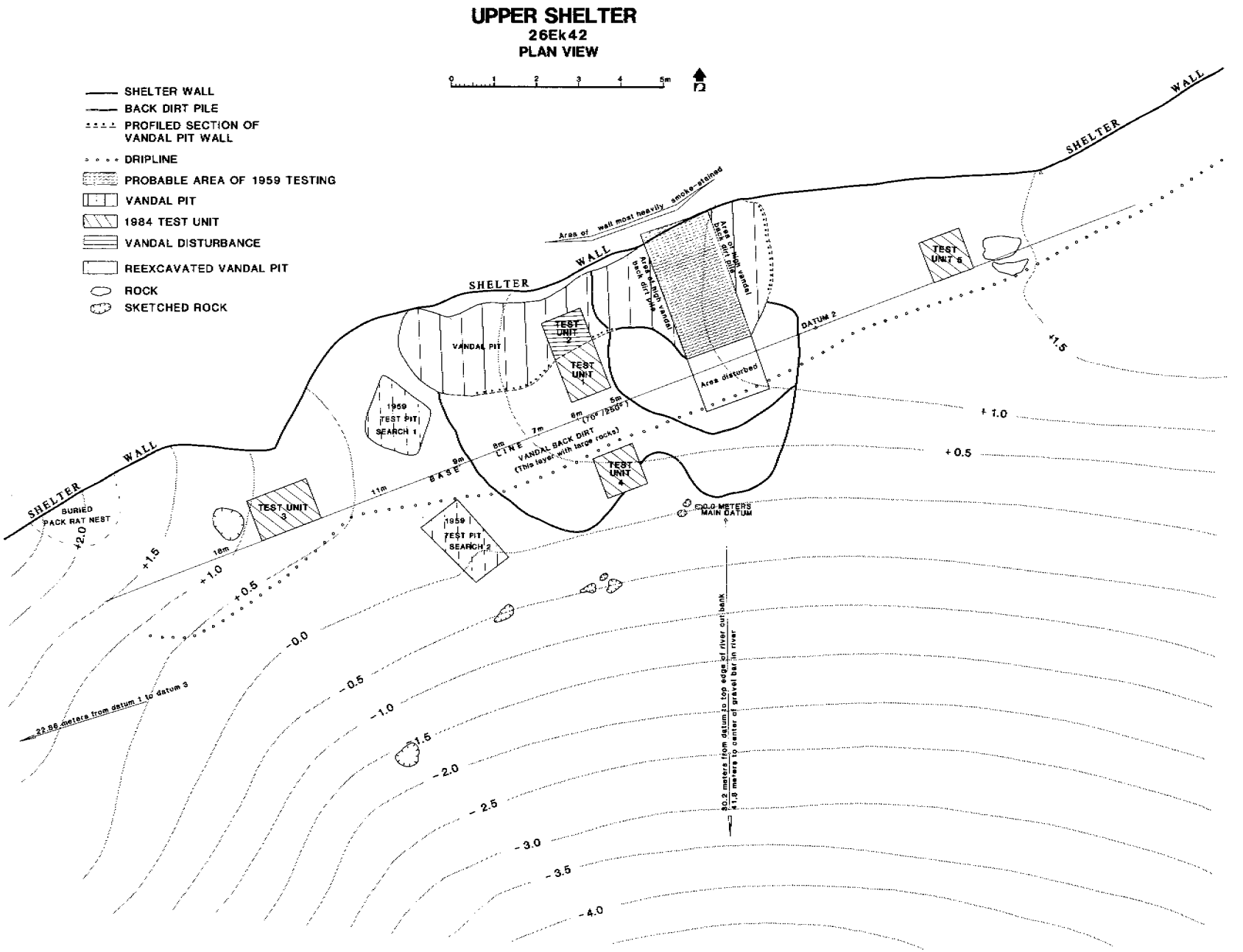


Fig. 3. Contour site map of Upper Shelter showing location of vandal trench, 1985 test units, and estimated location of the 1959 trench.

location now considered the probable area of the 1959 units is based on a peculiar curvature of the vandal pit wall, the occurrence of a large piece of metal scrap, and conversation with Gene Prince, principle museum photographer of the Lowie Museum of Anthropology, University of California-Berkeley, and an original crew member during the 1959 testing. The units had apparently been backfilled using discarded water heaters acquired from a local ranch.

Five test units were excavated in 1985. Two 1 x 1 meter units were placed inside the dripline near the shelter wall, upslope toward both ends of the formation face. These units were designated TU#3 and TU#5. The purpose of these units was solely to document the presence or absence of cultural deposits. A third unit, TU#4, was placed a short distance outside the dripline of the shelter. Two primary units were placed inside the dripline and situated in such a way that one complete 1 x 1 unit (TU#1) extended from the southern edge of the vandal trench into undisturbed dry deposits. TU#2 was a partial unit truncated by the vandal pit and excavated adjacent to TU#1. Due to their proximity, these two units were treated as one and labeled as TU#1/2. Units TU#1/2 and TU#4 were excavated to a depth of 3 meters, encountering a volcanic ash predating 5800 years of age. These units were necessarily closed at that depth for reasons of safety and difficulty of excavation.

Excavation was by 10 and 20 cm arbitrary levels except where natural strata could be used as excavation levels. The levels were excavated parallel to the original surface slope. Trowels were primarily used when excavating thin natural strata, particularly the organic layers. Shovel shaving was used in the upper 1.5 m of undifferentiated fill with the assistance of rock hammers in the lower thick strata containing primarily large roof fall. Being a test excavation, procedures were made expeditious where possible. Most artifacts and tools were expected to be recovered in the screen. Significant features were removed as levels when appropriate. All excavated artifacts were saved; items from disturbed provenience, such as vandal back dirt piles, were not saved unless diagnostic or unique to the site. Profiles were drawn of at least the north and east walls of each excavation unit and selected portions of the vandal trench walls. All profiles were also photographed.

At the completion of excavation all units were backfilled using excavated fill which had been captured behind a temporary retaining wall constructed at the west end of the site. The surface of the site was then restored to its original contour prior to vandalism and test excavation.

Laboratory

Bone, shell, lithics, and organic artifacts from each level in each test unit were sorted in the laboratory. Bone was then further divided into very large (horse, cow, bison, elk), large (deer, bighorn, antelope), and small (coyote and smaller) mammal classes and fish and bird categories. These bone classes were then weighed and modified bone separated for further attention. Shell was simply weighed. Counts were not made of bone and shell waste.

Lithic artifacts were differentiated into tools, preforms, whole flakes, and flake fragments/angular waste/heatspalls. The latter class was counted

and weighed only. Whole flakes were separated into core preparation (CP), core reduction (CR), and biface tool manufacture (BTM) flake types. These flakes were counted, weighed, and separated into size categories. Sizing was performed using graduated circles sized from 0.5 to 5 cm in .5 cm increments. Used and modified flaked stone artifacts were segregated into core, used flake, uniface and biface classes. Bifaces were further separated into slicing tools, projectile points, "choppers", drills, and generalized bifaces. Length, width, thickness, weight, and various other attributes were determined for all used and modified flaked stone artifacts. Hammerstones and groundstone were measured and weighed.

Utilized edges of unretouched tools, cores and worked tools were further inspected. A 10x hand lens was the maximum magnification used and care was taken to make detailed artifact examination under an incandescent light source. In this analysis, wear was identified by the presence on an edge of at least five flake scars of 3.0 mm or less in size. These flake scars must be patterned in one of two ways. Pattern #1 is at least is at least five contiguous, even-sized scars on one side of an edge. This pattern is usually produced by a tool used in the scraping use-mode. Pattern #2 is at least five contiguous or noncontiguous scars on both sides of the same portion of the edge, scars will be oblique and perpendicular to the edge, striations may or may not be present but, if present, will be oriented parallel to the edge. This pattern is usually produced by a tool used in the slicing use-mode. Snaps, or bending fractures, may be present on either edge. Dorsal, ventral, and platform edges, as well as dorsal ridges and fracture faces, were examined for wear. This restrictive procedural description of use-wear is an attempt to standardize probable identification error and to make results consistent and testable. It is accepted that there will be some confusion between use-wear, edge damage, backing, and retouch. It is further assumed that retouch will be confused more often with Pattern #1, and that post depositional edge damage will be confused more often with

Ceramics were analyzed by Fred Frampton, Elko District, Bureau of Land Management. Field notes and forms, artifact bags, and drawings are stored at the Museum of Anthropology, University of Nevada, Reno.

Chapter 2. STRATIGRAPHY AND DATING

Introduction

The main culture bearing deposits at Upper Shelter are at an elevational low point between two colluvial cones sloping into the site from the east and west around either side of the large block of the limestone formation forming the shelter. Since the cone on the east side is dominant, the general slope of the surface and all subsurface strata observed in the vandal trench and test units 1/2, 4 and 5 dip down from east to west. On the other hand, the surface and strata of TU#3 located on the western cone slope down west to east. The richest cultural deposits appear to be at the low point between the two cones and upslope to the west. From north to south the surface is gently mounded with a slight berm formed under the dripline. The slope steepens outside the dripline and steepens yet again another 3 to 4 meters out.

Excavation by natural stratigraphic levels was possible in the upper portions of the deposits inside the dripline (Fig. 4). The inner area includes test units 1/2, 3 and 5. Outside the dripline stratigraphic differentiation in TU#4 was much more difficult. In the discussion to follow TU#1/2 is the model for all other units due to the clarity of stratigraphic layers and depth of excavation in the unit. Excavation levels and strata in the other units are related to TU#1/2 where possible.

Test Units #1/2 and #4 Stratigraphy

For analytic purposes, actual excavation levels, both natural and arbitrary, sharing key characteristics are grouped into strata, which in turn are grouped into general stratigraphic zones. Strata are established only when visible in all three walls of TU#1/2. When not traceable in three walls, distinctive layers are subsumed into other strata. Stratigraphic zones are listed using Roman numerals, natural strata are listed using the letters of the alphabet, and excavation levels are listed using Arabic numerals, each sequentially labelled from the uppermost of the fill down. The deeper test units, TU#1/2 (Fig. 5, 6, 7 and 8) and TU#4 (Fig. 9), are discussed together. Units TU#3 and TU#5 and the vandal trench are discussed separately.

Slope of the formation wall below the present surface also provides hints of interesting prospects for future research. The formation wall recedes immediately below the present surface and then projects outwards sharply between 80 and 100 cm below the surface, reaching its maximal projection between 160 and 180 cm below the surface. It then recedes again, with the recession continuing beyond the depth at which excavation was discontinued in TU#1/2, approximately 300 cm below the surface.

Zone VII: Red deposits below ash layer

Zone VII contains Stratum P and parts of excavation levels 23 and 24. This compact red sandy fill with angular granules and pebbles is situated below the 6900 year old Mazama ash layer in TU#1/2. Excavation was terminated prior to the complete removal of this stratum. The zone is 25 cm thick in the northeast corner, pinching out in the other corners. The principle

Fig. 4. Photograph of the upper deposits of Test Unit 1/2 (TU#1/2) showing stratigraphic integrity of the site.

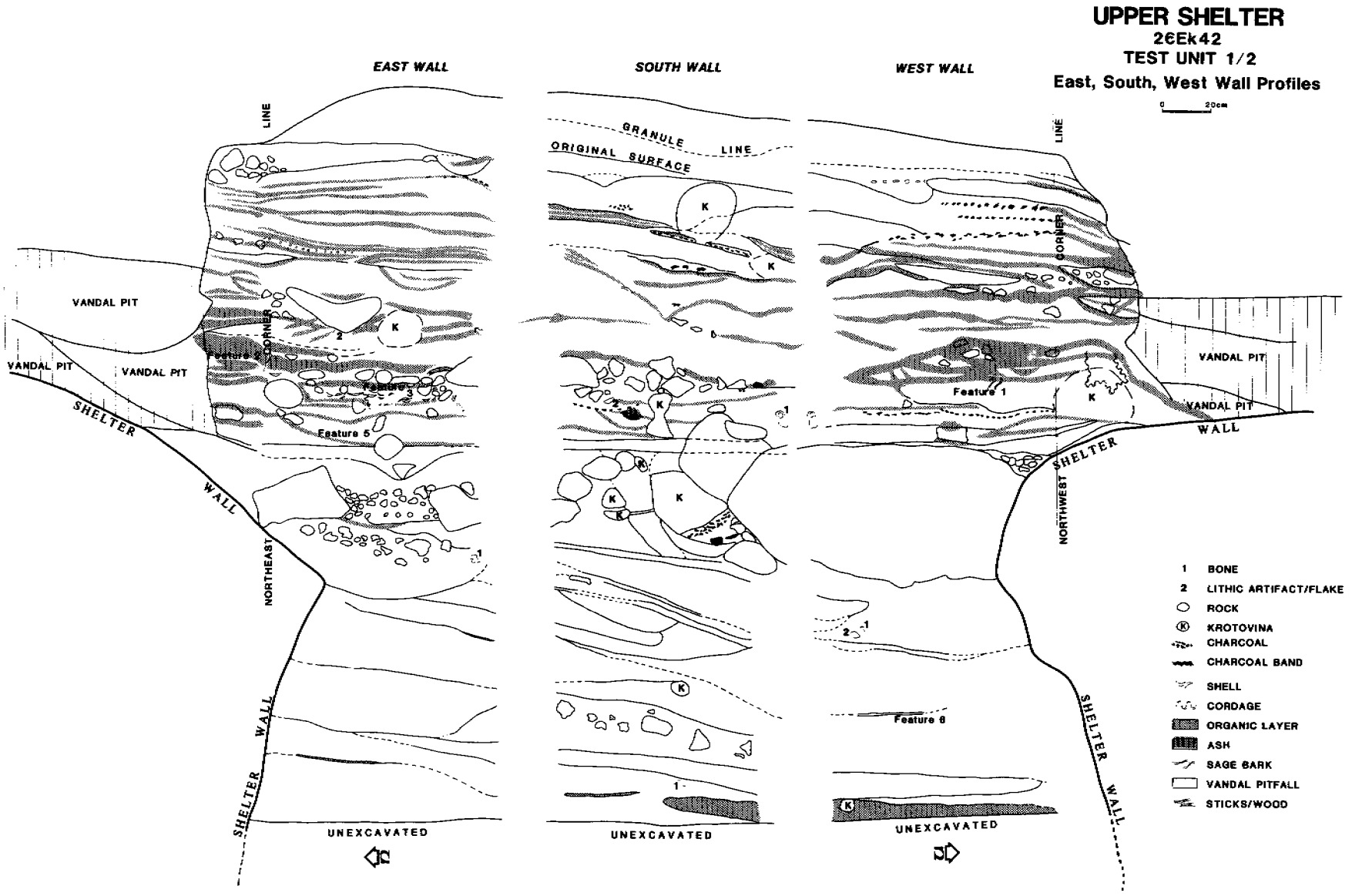


Fig. 5. Profiles of Test Unit 1/2 stratigraphy, Upper Shelter.

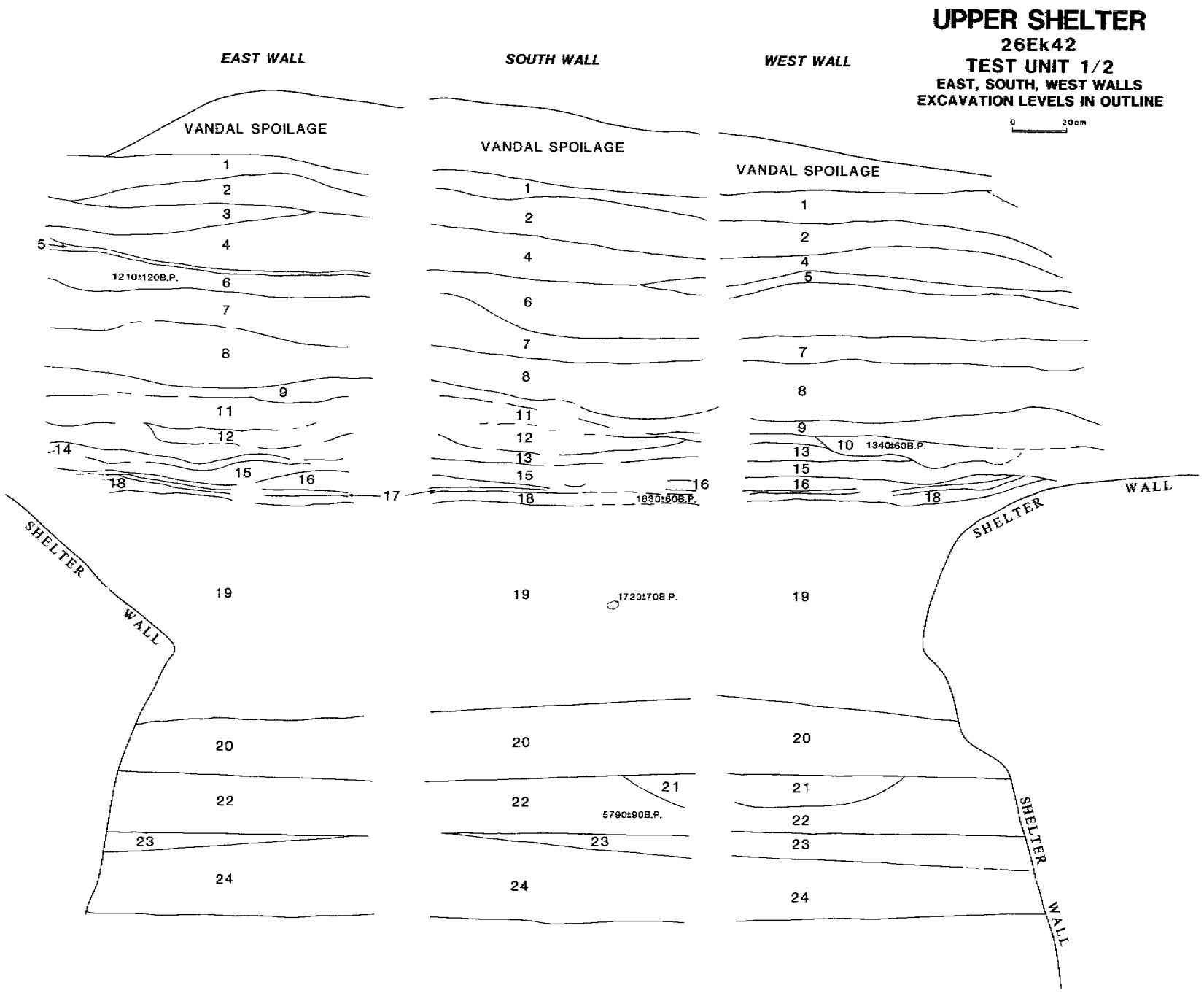


Fig. 6. Excavation levels of Test Unit 1/2, Upper Shelter.

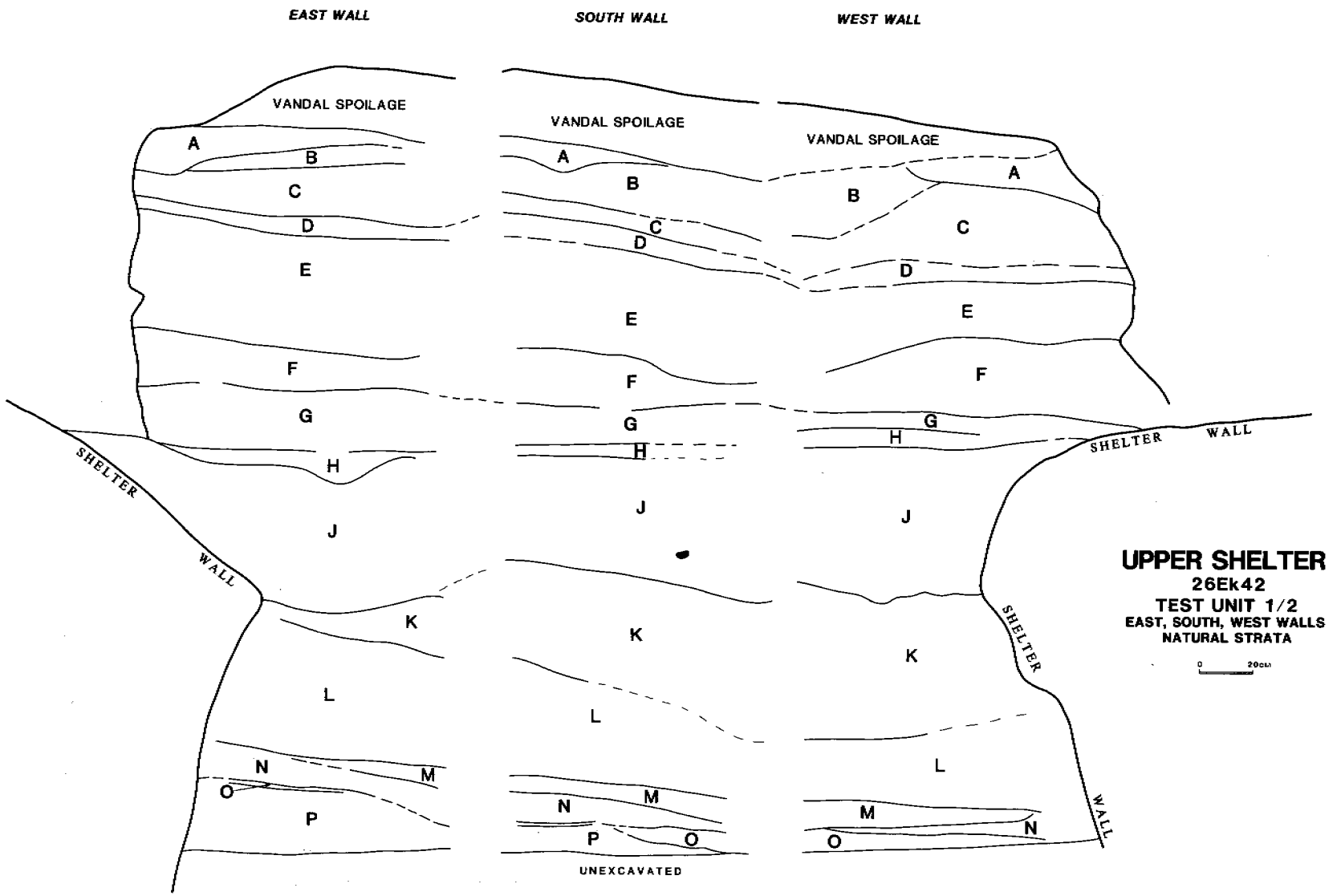


Fig. 7. Natural stratigraphy diagram of Test Unit 1/2, Upper Shelter.

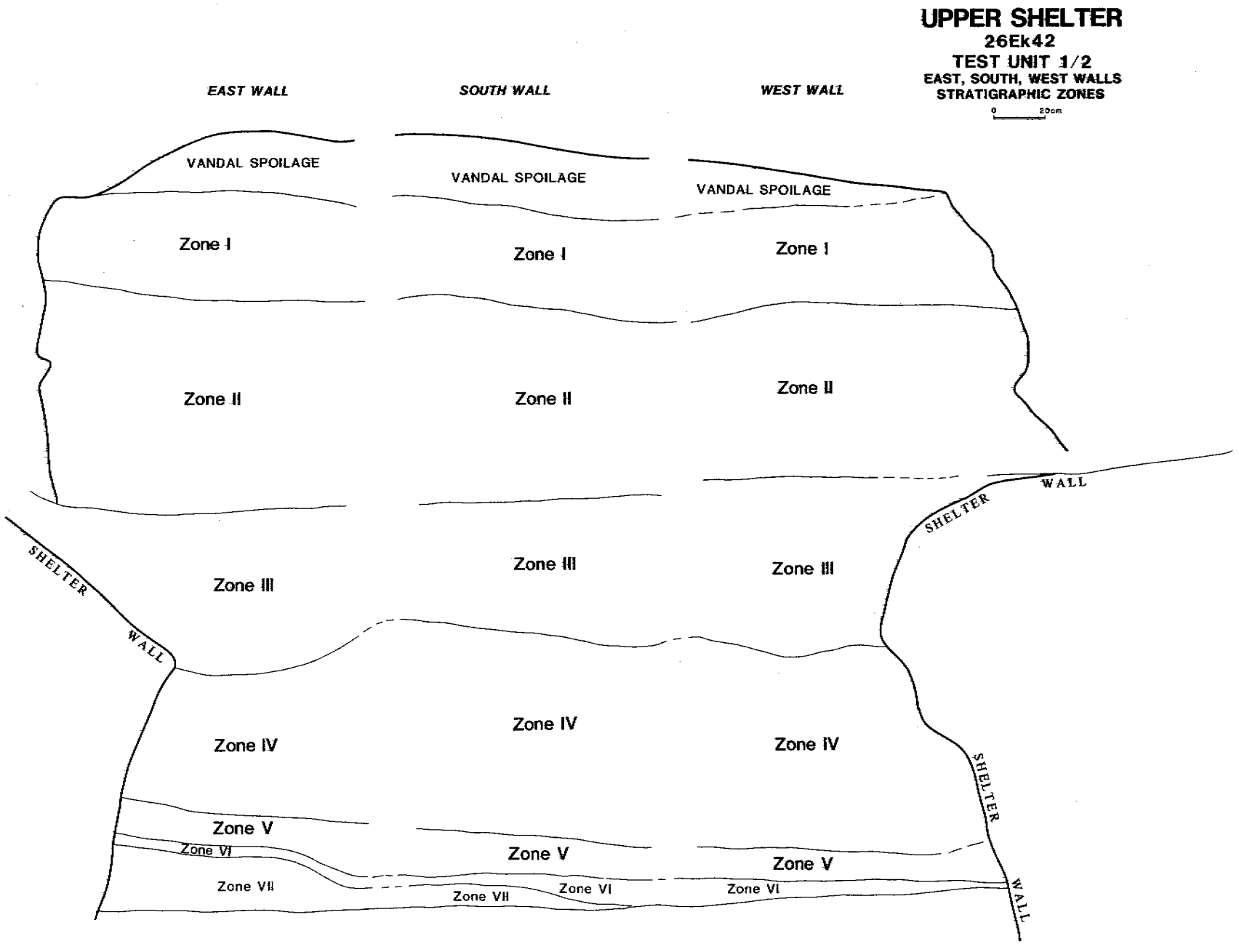


Fig. 8. Stratigraphic zones of Test Unit 1/2, Upper Shelter.

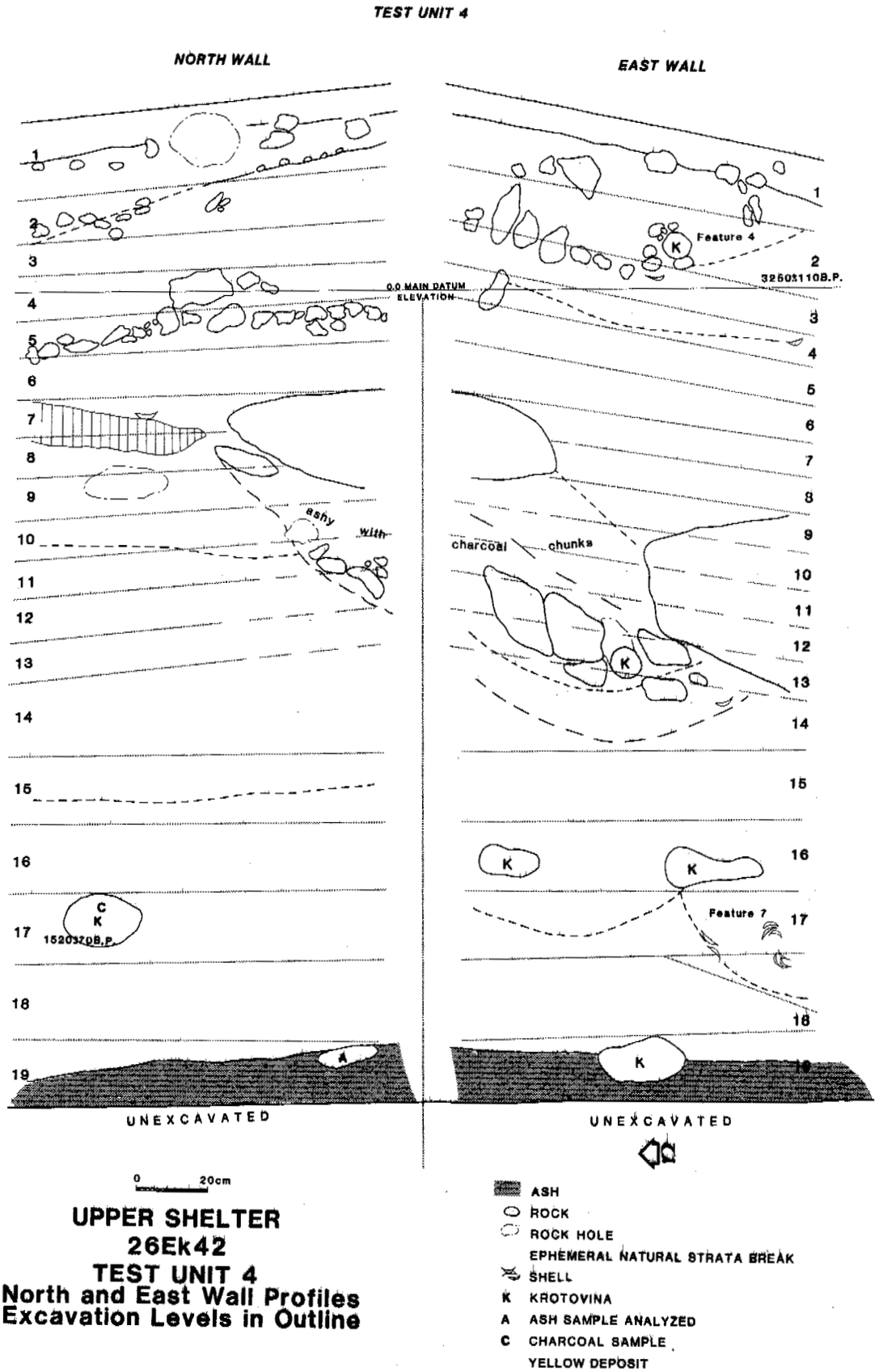


Fig. 9. Excavation levels and wall profiles of Test Unit 4, Upper Shelter

depositional mechanism appears to be colluvial flow with in situ weathering. The occurrence of cultural materials is quite sparse.

Zone VI: Volcanic ash layer

This zone contains Stratum O and parts of excavation levels 23 and 24 in TU#1/2 and excavation level 19 in TU#4. In TU#1/2 the ash layer varies from a thin, 1 cm thick, very compact white layer in the northeast quadrant of the unit to a thicker, 14+ cm thick, less compact, pinker layers. The pink color may be due to mixing with Zone V materials. A sample of the ash was inspected by Dr. Gordon G. Goles of the INAA Laboratory, Department of Geology, University of Oregon. On the basis of INAA analysis and comparison with the range of compositions of known Mazama ash specimens, the ash appears likely to be air-fall from the culminating eruption of Mt. Mazama. A more thorough analysis would be needed to confirm this association. However, the location of the ash layer in the fill ca. 20 cm below the 5790 B.P. radiocarbon date in Zone IV provides further evidence of its origin. No cultural materials were found within the ash layer.

Zone V: Red deposits above ash layer

Zone V includes strata M and N and excavation levels 22-24 of TU#1/2 and excavation levels 15-19 of TU#4. This 13-20 cm thick ochre-red compact sandy deposit with angular granules is less clearly defined in TU#4. In TU#1/2 the upper portion of the zone, Stratum M, is much more compact and contains fewer pebbles than the underlying Stratum N. Stratum M could be an ephemeral living surface immediately below Hearth Feature 6 of Zone IV dated 5790 B.P. Similar to Zone VII, the depositional mechanism is colluvial flow with insitu weathering. In fact, the fill is probably the same as Zone VII, separated by the Zone VI ash layer. In TU #4 a shell filled pit (Fig. 9) was found. Artifactual materials are again sparse.

Zone IV: Yellow sand deposit

Zone IV contains strata K and L and excavation levels 19-23 of TU#1/2 and levels 11-15 in TU#4. This zone consists of several yellowish strata of sand and angular granules and pebbles with some large formation rocks. Stratum K contains a hearth (Feature 6) at its base, overlain by thin bands of decomposed organics and charcoal toward the top. Stratum K contacts the bottom of the maximum formation wall projection described above. Below Hearth Feature 6 is Stratum L, which is composed of much the same materials as Stratum K, but without the banding and with an admixture of red deposits from contact with Zone V. The zone is again more amorphous in TU#4. Colluvial flow is still the dominant depositional mechanism with in situ weathering and infrequent cultural activity also occurring. In addition to the hearth, several ephemeral living surfaces were found. A variety of Archaic projectile point styles were recovered including Northern Side-notched, Elko, Pinto and Gypsum. A radiocarbon date of 5790±90 B.P. was acquired from Feature 6 located near the bottom of the zone.

Zone III: Rockfall

Zone III includes strata H and J and excavation levels 18 and 19 of TU#1/2 and levels 6-11 of TU#4. This zone is made up of formation rock (Stratum J) ranging from boulder size to small chunks, large krotovina, and a hearth radiocarbon dated to 1720±70 B.P. Below and above this zone are thin layers of bright yellow sand and fines suggesting in situ weathering of formation rock. Capping the zone is ash and a pulverized charcoal layer (Stratum H) dated to 1630±60 B.P. Zone III may have been artificially flattened during occupation. Again, the boundaries of this zone are more amorphous in TU#4. The two dates from this zone, 1630 B.P. and 1720 B.P. from the top of the zone and from a hearth near the bottom of the zone respectively, are within one standard deviation of each other and about 300 years older than the 1340 B.P. date from near the bottom of Zone II. These dates indicate a rapid build up for this zone. Curiously, this rockfall zone is ca. 60 cm higher in absolute elevation in TU#4 outside the dripline than in TU#1/2 within the dripline. Normally sheltered deposits are thicker because of the focus of cultural activity within the sheltered area. The marked elevation difference between the two units again suggests artificial movement of this portion of the deposits. Perhaps the fall was leveled off and the excess tossed outside the dripline. A low frequency of artifacts was recovered, however of special note are the obsidian artifacts recovered from the ash layer (Stratum H). Obsidian does not occur above Stratum H. Other cultural materials recovered include large triangular dart points of the Elko, Pinto and Gypsum styles.

Zone II: Dense organics

Zone II includes strata E-G and excavation levels 6-17 in TU#1/2 and levels 1-5 in TU#4. The zone is 63 to 90 cm thick. The upper portions of the zone appear to be slightly fire affected. Stratum E is composed of eight or more organic layers with interstitial inorganic layers, pebble lines, rock fall, and krotovina. None of these individual layers can be followed unambiguously from the east to the west wall of TU#1/2, probably due to the blurring of strata boundaries caused by spreading dripline moisture. A living floor is associated with Stratum E in the eastern profile. Many of the interstitial layers in this stratum appear to be composed of a fine chaff of grass and other organics. Some of the organic layers may have been truncated by a large formation rock fall, a portion of which is retained in the eastern wall of TU#1/2. A radiocarbon date of 1210+120 B.P. was obtained from the upper portion of this stratum. Branches found in this portion of fill are budded indicating spring collection.

Stratum F contained the best preserved organics of any stratum in the site. The stratum appears to contain some sort of structure (Feature 2) composed of long grass stems and branches, interlaced with parallel sided strips of aspen and sage bark. Beneath these structural components is a floor composed of densely matted organics and organic chaff with tiny flakes and feathers. Within the floor is a shallow scooped out hearth (Feature 1) found in the northwest corner of TU#1/2. Charcoal from this feature was dated to 1310+60 B.P. A similar scooped out depression in the southeast corner of TU#1/2 appears to be a mussel cooking oven (Feature 3). This feature contains quantities of fragmented mussel shell, and slightly fire affected rock,

covered by a thin ash layer. See the feature descriptions for more details. Stratum F thus appears to represent one episode or closely related episodes of site use approximately 1350 years ago.

Stratum G appears to be a series of yellow to brown compacted living floors overlaying the top of Zone III. In this stratum dripline moisture and white fungus are present throughout most of TU#1/2. This stratum contains Feature 5 comprising large local chert core preparation flakes, two cores, a drill, decomposed grass and branch layers, bent and twisted sticks, large mammal bone fragments, and ash.

In sum, evidence of burning is confined primarily to the upper portion of the zone near the contact with Zone I. It is unclear whether the inorganic portions of this zone are a natural influx during light occupation or non-occupation, an increase in weathering, or artificial filling. The presence of animal scat seems to support the non-occupation alternative. Toward the bottom of the zone, dripline moisture had infiltrated across most of TU#1/2. The wall profiles show the blurring effects of this moisture, particularly in the south wall. Cultural materials include Eastgate points and S-twist 2-ply cordage. The time of deposition of the zone falls between the two radiocarbon dates of 1210 B.P. at the top of the zone and the 1630 B.P. date for Stratum H, the upper component of Zone III.

Zone I: Fire affected organic and inorganic layers

This upper most zone varies from 43 to 63 cm in thickness and includes strata A-D and excavation levels 1-5 in TU#1/2 and level 1 of TU#4. Each of the four strata are highly distinctive and could be excavated in natural layers. Stratum A is composed of white intensively fire affected layers of formation spalls, ash, pulverized charcoal, granules and pebbles. Stratum B has a similar composition of the above stratum except for the markedly red color. Stratum C consists of several fire darkened layers of organics interspersed with inorganic layers. The upper layers are intensively burned with the effects of heat lessening towards the bottom of the stratum. Color changes from black to cinnamon brown. The organic layers, composed primarily of grass stems and twigs, appear as indistinct layers in some profiles and distinct floors in others. A concentration of large bone, fire-cracked rock, and large chert flakes was noted during excavation, but not assigned a feature number. At the bottom of Zone I is Stratum D, a thin reddish brown colored stratum composed of indistinct charcoal and inorganic layers. The organics were more apparent in the western portion of the unit. A distinct angular pebble line defines the bottom of Zone I in the eastern wall of TU#1/2.

In sum, this zone contains an interfingering of organic and inorganic layers all of which appear to have been fire affected. The affects of fire are less pronounced toward the bottom. A paucity of cultural materials suggests infrequent use of the site in relatively recent protohistoric times. Bifacial arrow point preforms were recovered from this zone. Bottom layers of Zone I in TU#1/2 and excavation level 1 of TU#4 contain Shoshoni ware pottery, however, no other time diagnostics are present. A modern date was obtained from a charcoal sample collected in Stratum C. The very bottom layers of the zone appear to be primarily inorganic. Vandalism, extensive fire, and

historic use of the site by people and livestock have obscured the definition of the surface and the character of this zone in general.

Test Unit #3 Stratigraphy

The purpose of TU#3 was to determine simply the presence or absence of cultural material in the western end of the shelter. Beneath loose inorganic surface material and a dung layer, cultural layers were found 20 to 30 cm below the surface, sloping down west to east (Fig. 10). No less than five layers of burned and unburned matted fibers were observed and at least one compacted floor is identifiable with large pieces of wood protruding from adjacent unexcavated units. The layer of organics is about 20 cm thick. Below it is a yellow inorganic deposit. While excavation of the unit only extended about 32 cm below the surface, a 3" soil auger was used to further sample the deposits until being stopped by loose rock at an additional 40 cm of depth. No further organic materials were discovered. The presence of a bent twig effigy suggests that the organic layers in this unit may correlate with Zone II of TU#1/2.

Test Unit #5 Stratigraphy

This unit was excavated to 63 cm below the surface and augered 35 cm further. One thin organic layer was encountered (Fig. 11). Only a few lithic artifacts and three pieces of cordage were found. The nature of materials in this layer suggests the presence primarily of chaff, produced from cultural activities utilizing fibrous organic materials, perhaps cordage making. The slope of the organic layers relative to the cone development in which they were found suggests that the occupational surface had been artificially flattened, presumably to form a comfortable habitational space. No time sensitive artifacts were recovered in the unit. More than likely the habitational debris belongs to either Zone I or Zone II occupation.

Vandal Trench Stratigraphy

The following observations were made concerning stratigraphic associations between the vandal trench profiles east of TU#1/2 and the test unit (Fig. 12 and 13). Stratum C of Zone I, composed of several burned organic layers in the east wall of TU#1/2, becomes two separate dark compacted organic floors along with other organic layers about 1.25 meters to the east of the unit. Perhaps Stratum C may be actually fingering out from the east as it reaches the area of TU#1/2. A rock fall episode, different from the one in Zone III of TU#1/2, is present in the vandal trench profile. It merges into what may be Stratum D and would help explain the inorganic nature of this stratum in TU#1/2. Just below the rock fall, the contact of Stratum D and Stratum E becomes another compacted organic floor. A wedge shaped inorganic layer, contiguous to and west of the rockfall, becomes incorporated into Stratum E toward TU#1/2 and may be represented as a thick inorganic layer above Stratum F in the east wall profile of TU#1/2. Stratum G in the vandal trench comprises 15 to 20 separate organic layers. These layers are uniformly thin and appear to be primarily the projecting ends of grass stems. The organic layers are separated by layers of mixed chaff, sand, and dust. The upper layers of Zone III, Stratum H, occurs beneath Stratum G in the east vandal

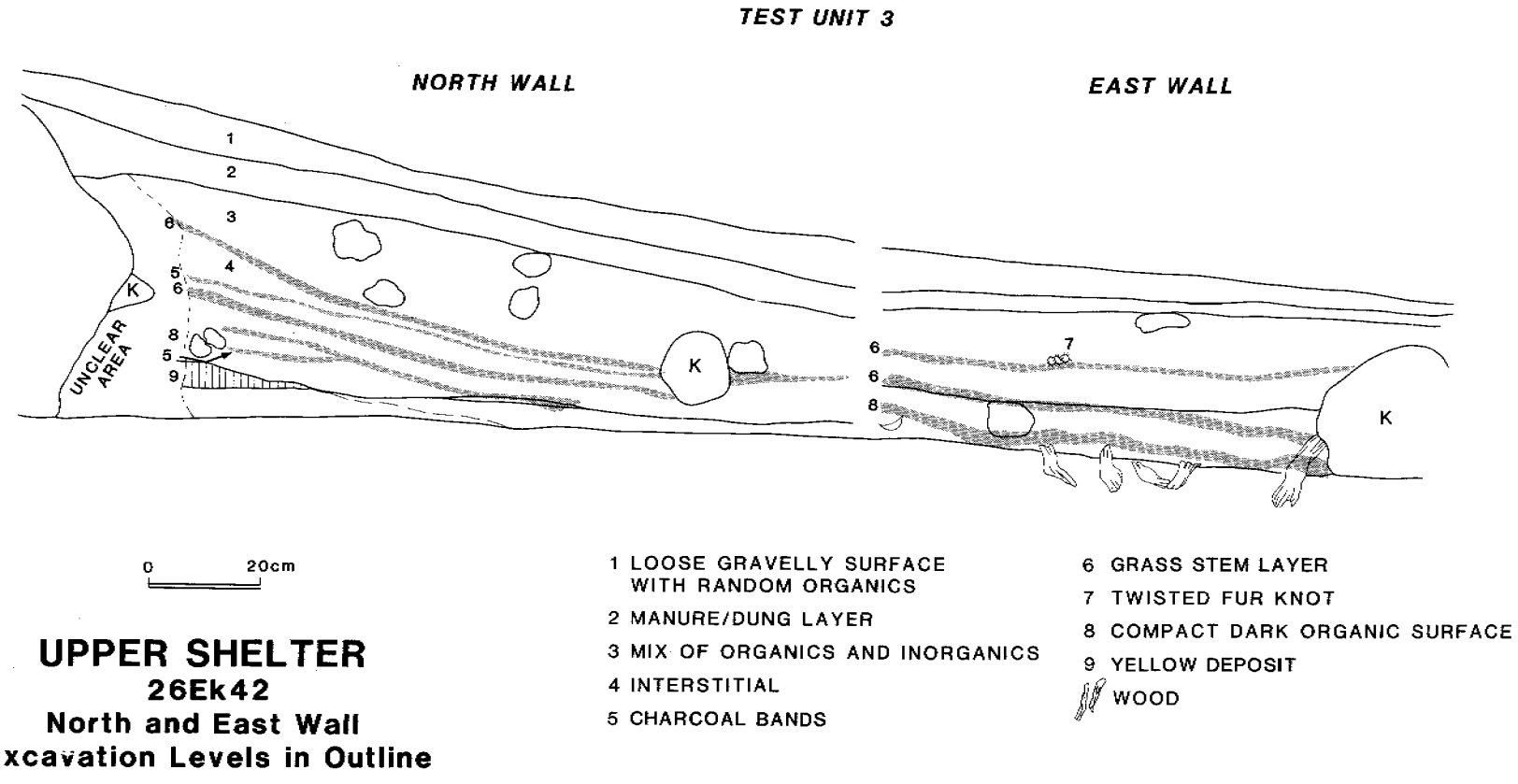


Fig. 10. Excavation levels and wall profiles of Test Unit 3, Upper Shelter.

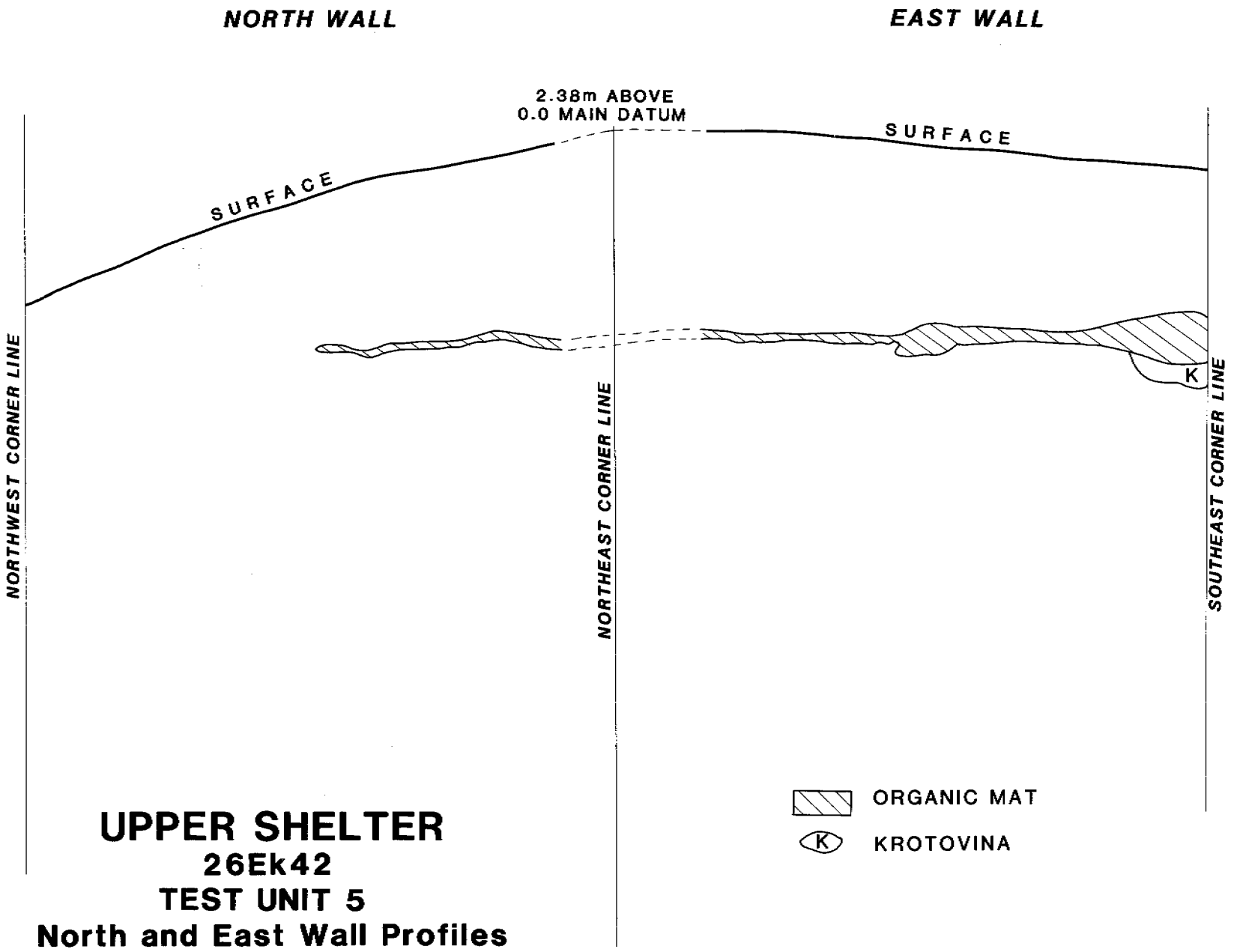


Fig. 11. Wall profile of Test Unit 5, Upper Shelter.

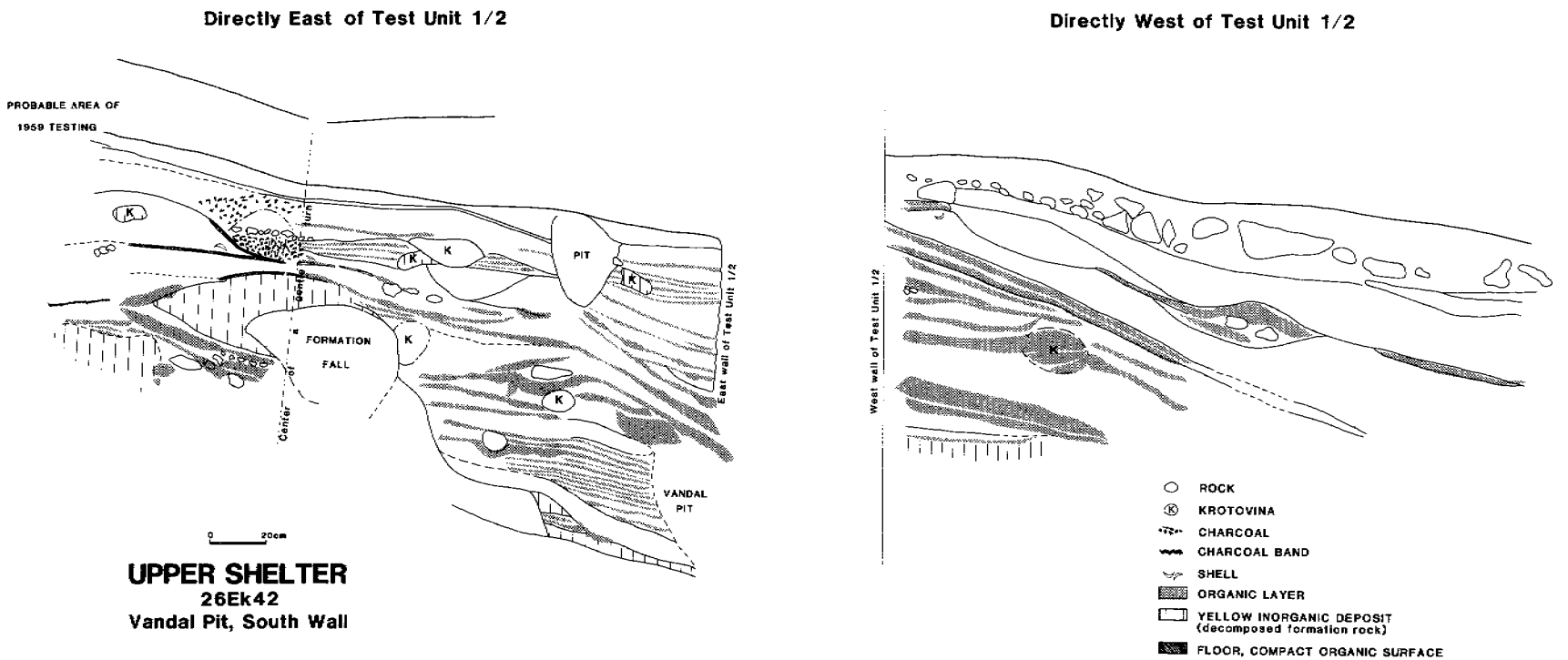


Fig. 12. Wall profiles of vandal trench in proximity to Test Unit 1/2, Upper Shelter.

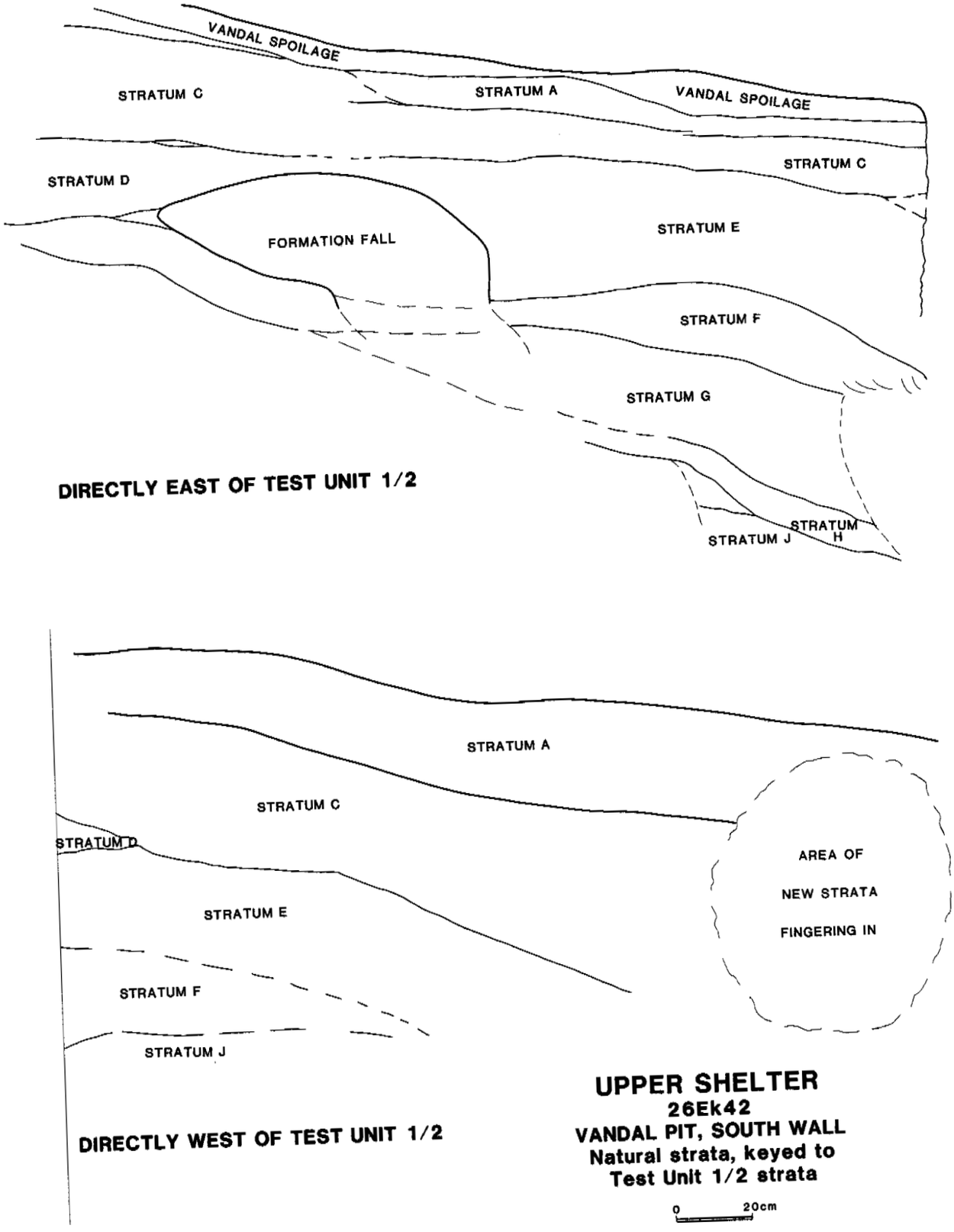


Fig. 13. Stratigraphic zones identified in vandal trench wall in proximity to Test Unit 1/2, Upper Shelter.

trench sidewall and slopes sharply up to the east. A wedge of organic layers are present below Stratum H furthest to the east. However, the extent of this new stratigraphic unit is obscured by the vandalism in this area and the rise of the vandal trench floor. It is possible that this wedge of organic layers is a remnant of what were once more extensive layers continuing to the west.

West of TU#1/2, Zone I dips into the vandal trench floor and concurrently becomes much thicker. New strata also seem to be fingering into this zone from the west. These associations are obscured by extensive burning. What is visible indicates thickening and dipping to the west where future investigations may uncover more manifestations of Zone I cultural activities. Zone II also dips into the floor of the vandal trench, as does Stratum H of Zone III.

The far eastern wall of the vandal trench was not connected with the other walls profiled and for this reason strata and zones cannot be compared (Fig. 14). Its importance is in showing the continuation of stratified deposits containing organic material. More than likely the fill of this portion of the vandal trench correlates with zones I and II of TU#1/2.

Radiocarbon Dates

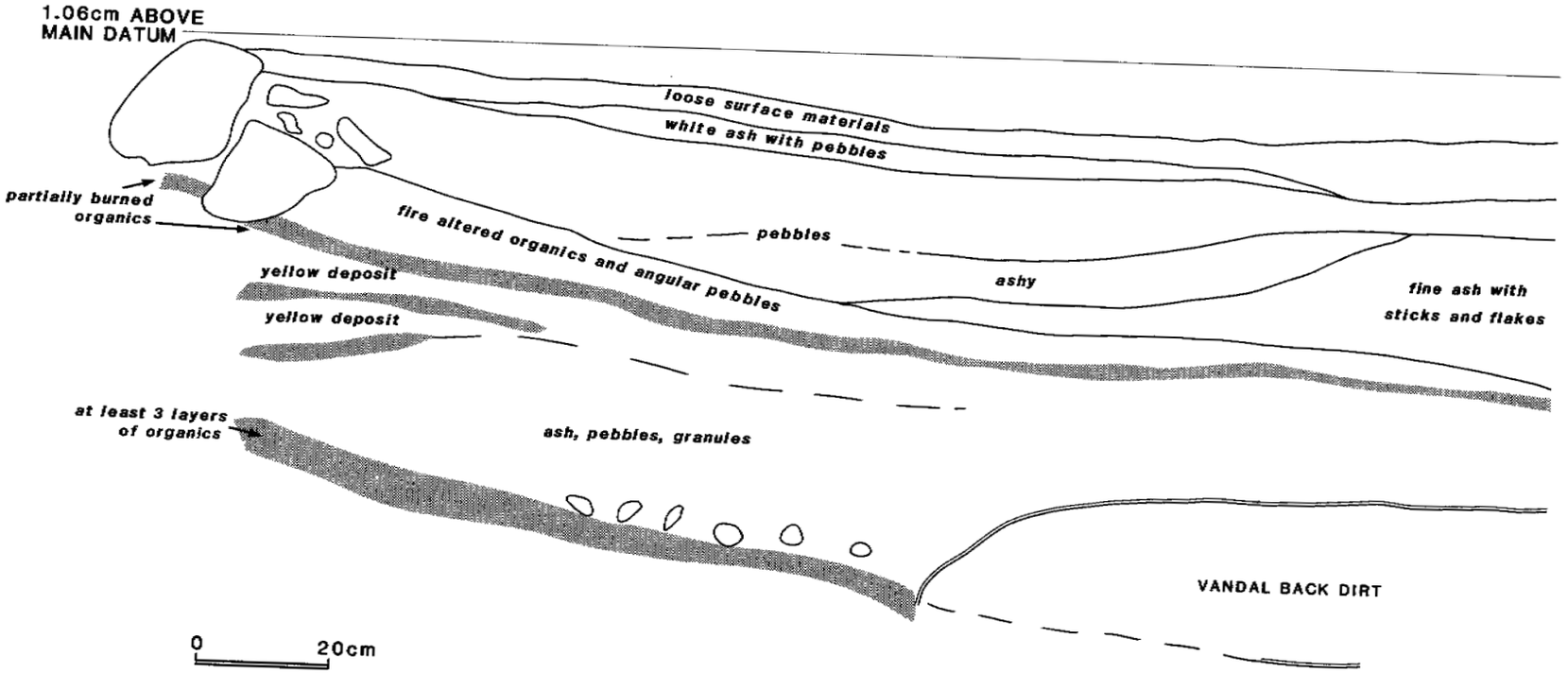
Eight charcoal samples were sent to Beta Analytic, Inc. for analysis. The resultant, uncorrected dates and other relevant information is provided in Table 1. Comments for each sample are given below.

1. Beta-12757 (1340±60 B.P.): The sample was gathered from throughout a shallow hearth depression. Eastgate projectile points were recovered above and below. The date is acceptable.

2. Beta-12758 (3250±110 B.P.): This sample was taken from a small concentration of charcoal at the base of a river cobble and fire cracked rock concentration designated Feature 4. The excavator noted that it was unclear whether this feature was in situ or a discard of material from elsewhere. The sample was not associated with any time diagnostic artifacts to aid in resolving its reliability. The sample is considered unacceptable based on its vertical positioning relative to dates from TU#1/2 where stratigraphic control is much more detailed.

3. Beta-12759 (1720±70 B.P.): The charcoal sample was taken from a hearth ash layer overlying a 5 cm thick layer of reddened, fire affected earth, and under an uninterrupted Stratum H. This charcoal is from one stick, 3-4 cm in diameter and 15+ cm long. The sample was discovered within a rockfall zone. The 70+ cm thick excavation level contained Elko, Gypsum, and Pinto points. This date is possibly too young, but is acceptable (see Beta-13828 comments).

4. Beta-12760 (5790±90 B.P.): The sample was collected from throughout excavation level 22 but is primarily associated with an ephemeral living surface. It can be considered an average date for this level which crosscuts three natural strata and is above volcanic ash. This level produced a "mule-eared" biface which resembles a wide concave base point with rejuvenation retouch.



UPPER SHELTER
26Ek42
Vandal Pit, East Wall

Fig. 14. Wall profile of east end of vandal trench, Upper Shelter.

Table 1. Radiocarbon dates from Upper Shelter.

All dates were processed by the Beta Analytic Inc. Lab. The half life used by Beta Analytic for radiocarbon is 5568 years.

Lab Number	Reference No.	Material Analysed	Date B.P.	Provenience	Excavation Level	Stratum	Zone	Feature	Comments
Beta-12805	#63	charcoal chunks	modern	vandle pit	3*	C*	I	na	*determined by extension of stratafrom TU#1/2; this date minus two sigmas=270 B.P.
Beta-12807	#6	charcoal chunks	1210±120	TU#1/2	6	E	II	na	top stratum of Zone II
Beta-12757	#10	charcoal chunks	1340±60	TU#1/2	10	F	II	1	
Beta-13828	#25	charcoal chunks	1630±60	TU#1/2	18	H	III	na	top stratum of Zone III
Beta-12759	#35	charcoal one, piece	1720±70	TU#1/2	19	J	III	na	
Beta-12760	#40	charcoal chunks	5790±90	TU#1/2	22	L,M,N	IV	na	
Beta-12758	#15	charcoal chucks	3250±110	TU#4	2	?	?	4	unacceptable date, see discussion
Beta-12806	#51	charcoal chucks	1510±70	TU#4	17	?	?	na	unacceptable date, see discussion

5. Beta-12805 (modern): This sample came from Stratum C in the vandal trench. Beta Analytic notes that ambiguities exist for modern dates due to the burning of fossil fuels. This sample is correlated with extensive burning and subsidence associated with Zone I, therefore the modern date is reasonable, but in need of confirmation.

6. Beta-12806 (1510±70 B.P.): The sample is from excavation level 17 of TU#4 in proximity to krotovina, and not far above the volcanic ash layer. It is considered unacceptable.

7. Beta-12807 (1210±120 B.P.): This date was acquired on charcoal chunks removed from a charcoal lense in TU#1. While the ± factor of 120 years is large, it is acceptable. This relatively large sigma is reasonable considering the proximity of upper Stratum E to the burned Zone I. This portion of fill was fire damaged probably by Zone I burning.

8. Beta-13828 (1630±60 B.P.): This date is from a charcoal concentration in the southwest portion of Stratum H. Stratum H is the uppermost stratum of Zone III and is composed mostly of ash. This date likely marks the end of the Archaic occupation in this unit. The date is acceptable.

Summary

The colluvial cone development to either side of the sheltering formation face is the primary depositional process contributing to the lower 1.2 meters of the excavated deposit. Based on the slope of natural strata within the deposit the eastern cone is dominant over the western cone even as long ago as the deposition of volcanic ash over 5700 years ago. Cultural materials and thin charcoal lines are present throughout these lower zones. At sometime prior to 1700 years ago an episode of large rock fall from the formation face occurred. This episode produced a layer of variably dense rock at least 60 cm thick. There is some evidence that this layer may have been artificially moved and leveled by the inhabitants. After 1600 years ago and subsequent to the rock fall, debris introduced by the inhabitants became the dominant contributor of fill creating the upper midden deposits. The slope of these culturally rich deposits generally conforms to the previously dominant eastern cone slope, though at a less pronounced angle of recline. Minor depositional influences on the deposit include: animals, their dung and burrows; the effects of wind bringing in outside materials and modifying existing materials; and, *in situ* weathering of the formation wall. The limestone from the formation weathers into a bright lemon yellow fine material. The brightness of this yellow dims with the admixture of other, particularly organic, materials. Thus, coloration of roof fall is somewhat useful for determining cultural hiatii.

The substantial organic deposits of Zone II seem to have accumulated through a relatively short period of time. Stratum E (level 6), the upper most stratum of this zone, was dated to 1210±120 B.P. Toward the bottom of the zone, in level 10 Stratum F, a date of 1340±60 B.P. was obtained from Hearth Feature 1. An absolute lower time limit for the earliest portion of Zone II is some time after 1630 B.P., a date from the top of Zone III in level

18 Stratum H. The lower 20% of Zone II may have accumulated over a 300 year time span while the upper 80% of Zone II may have built up in as little as 130 years. This differential depositional rate may be explained by the effect of dripline moisture which has invaded across a part of the lower portion of Zone II, probably settling the deposits and decreasing the thickness of this portion of the deposit. The whole of the zone accumulated at most over a 400 year time period. This relatively short span suggests that use of Upper Shelter during Zone II times was much more intense, perhaps a response to some short term stimulus. Heizer et al. made a similar suggestion, placing the change around 1400 years ago (1968: 34). Similar records have been noted in the northeastern Great Basin region, perhaps marking a period of population boom with more sedentary habitation.

Chapter 3. THE CULTURAL RECORD

Cultural Features

Seven cultural features, distinctive in their appearance, were identified during the testing of Upper Shelter. Every individual organic layer could have been identified as a feature had time allowed and the test units been larger. As it was, each feature identified was only partially contained within an excavation unit and, thus, only edges and portions of features, not whole features, were revealed. A synopsis of each feature is provided below.

Feature 1: Hearth

A hearth or hearth contents discard was discovered in excavation level 10 Stratum F of Zone II in the northwest corner of TU#1/2. It extends into the west wall of the unit. It is a shallow (12 cm deep) irregular, unlined depression containing mostly ash with charcoal chunks and a thin layer (ca. 1-2 cm thick) of fire affected earth. This feature contained 13 pieces of cryptocrystalline debitage. It is potentially associated and contemporaneous with Feature 2 and Feature 3. A radiocarbon date of 1340±60 B.P. was obtained from the charcoal.

Feature 2: Structural remains

Collapsed structural members were found in excavation level 9, Stratum F of Zone II in TU#1/2. This feature is located in the northeast corner of the unit and only the edge is represented as it extends into the east wall. It consists of a well preserved amalgamation of grass, twigs, and bark. The twigs are 3-5 mm in diameter and retain bark. These twigs and grass stems are oriented east to west and are associated with sage and aspen bark. The aspen bark has been cut into 1.5 to 2.5 cm wide parallel sided strips. The aspen and sage bark may have been laced or twined through the grass and twigs. Eighty-six pieces of lithic debitage were found among the remains. Over half (56%) of the whole flakes were core reduction types. This structure overlays a dense compacted layer (excavation level 11) of matted organics containing feathers, shell fragments, and small flakes. This layer appears to be a floor and could be lifted out as a unit due to its compaction. The floor contained an Eastgate projectile point, two wrapped sticks, a small pointed stick, a willow splint loop, a feather bundle, one piece of cordage, a twisted stick, a bone flaker tip, a metate, two biface preforms, a utilized lithic flake tool, three times as much shell as bone, and 90 pieces of lithic debitage. A large quantity of shell found at the bottom of Feature 2 is likely related to Feature 3.

Feature 3: Mussel oven

A mussel cooking oven was uncovered in excavation level 12 of Zone II in TU#1/2. This feature was located in the southeast corner of TU#1 and extends into the east and south walls of the unit. It is a shallow depression containing slightly fire affected river cobbles and fire cracked rock, and is covered by a 1 cm thick layer of ash. This feature contains 194 grams of shell, which was 93% of the bone/shell total from this level. All mussel

shell is broken at the posterior edge opposite the hinge and umbar, probably from pry action though shell is naturally weakest there. None of the shell is burned indicating low heat or steaming if cooked. The feature is possibly contemporaneous with Feature 1.

Feature 4: Hearth

A hearth or discarded hearth contents was found in excavation level 2 of TU#4. It was screened separately from the rest of level 2. It is a loose concentration of slightly fire affected river cobbles and small fire cracked rock fragments. Charcoal is randomly dispersed throughout. A sample was taken of one small concentration which produced a radiocarbon date of 3250 B.P. See radiocarbon date comments for a discussion of why this date is considered unacceptable. Only one mussel shell fragment was located in this excavation level though shell comprised 64% of the bone-shell weight for all of level 2.

Feature 5: Lithic reduction area

A core preparation area on a living surface was found in excavation level 17, Stratum G of Zone II. This feature is located throughout TU#1/2 and extends into the east and west walls of this unit. Moisture may have decomposed the organic constituents of this stratum in the south portion of the unit. The living surface consists of a grass layer containing highly decomposed twigs and sticks. The flakes located in situ on this surface are large, eleven of the flakes are more than 45 mm in length or width. The feature also contains two twisted sticks, large mammal bone fragments, and one broken chert drill. Also on this surface are randomly placed formation rock fragments of pebble and granule size, and a few river cobbles. Three of the core preparation flakes fit together suggesting all flakes are from one lithic reduction episode. Two cores were found elsewhere in the excavation level. The feature is situated below a 1320 B.P. radiocarbon dated material and directly above Stratum H, an ash layer at the top of Zone III dated to 1630 B.P.

Feature 6: Hearth

A hearth was discovered in excavation level 21, at the base of Stratum K in Zone IV of TU#1/2. This 10 to 11 centimeter deep hearth depression clearly extends into the west and south walls and can be faintly traced into the east wall. The depression is coated with a 1 mm thick layer of pulverized charcoal. Beneath the charcoal is reddened fire affected earth. Large mammal bone and shell fragments are associated with the edges.

Feature 7: Pit

A pit feature was found in excavation level 18 of Zone V in TU#4. The pit is 35-40 cm deep in the southeast corner of the unit and extends into the east and south walls. Shell comprises up to 99% of the bone and shell weight for this feature. A large chert slicing tool and two flakes were associated with the pit. Shell, apparently from the pit, spills out over a contiguous surface which slopes down slightly from east to west.

Perishables

The perishable artifacts from Upper Shelter (26EK42) include remnants of basketry, cordage and netting, knotted fibers, composite constructions, miscellaneous artifacts of wood, and feathers. They are described using features and terminology suggested by Adovasio (1977), Emory (1980) and Shaw (1972), but with some variations. Table 2 summarizes typological and provenience data, and gives tentative identifications of materials used in artifact manufacture.

Basketry

Type 1. Close coiled, one rod foundation, split stitch.
Number of specimens: 1 (Fig. 15)

One tiny fragment of coiled basketry was recovered from the test excavations at Upper Shelter (level 13, TU#1/2). It consists of two coil rows only, each four stitches wide. The foundation appears to be one rod, probably willow. One coil row also contains a second small rod, perhaps the tip of a new element. Each foundation rod is split roughly in half by the stitch in the coil next above. The non-work surface shows apparent purposeful split stitches. No splices are in evidence. The work direction is leftward, and the work surface is probably the exterior of the piece. There is an accumulation of material on what is probably the basket interior (non-work surface) that might bear additional analysis. It is dark and shiney and appears to be either meal or perhaps berry residue. The material is worn from the center of stitches, as if rubbed off by friction or abrasion. The fragment is not charred. It is also not large enough to suggest a function.

Measurements: 1.87 cm. long by 8.5 mm. wide; wall thickness 4.2 mm. Three stitches per cm. with a stitch length of 4.5 mm.

Cordage and Netting

Cordage is ordinarily made of handspun vegetable fibers or narrow strips of twisted rawhide or other animal skin. In addition to complete and well made cordage, several pieces from the Upper Shelter test excavations represent possible stages in cordage manufacture. Materials used in manufacture (tentatively identified) are given in Table 2. Observations made on cordage and summarized below include: 1) direction of spin (S or Z); 2) direction of ply (S or Z); 3) number of elements in the ply; 4) diameter and length of the piece; and 5) angle or degree of twist [tight = 25-45 degrees; moderate = 10-45 degrees; and loose = 0-10 degrees (after Emory 1980)]. Several pieces have attributed functions, including in netting construction. Others are too fragmentary, making attribution of function difficult.

Type 1. two-ply, S-spun, Z-twist; tight, fine.
Number of specimens: 1 (Fig. 16)

A moderately long (88.5 cm) piece of fine cordage of this type was recovered from Upper Shelter, level 9/8, TU#1/2. One end is broken and the other has an 8 mm. loop secured with a modified boline knot. The piece tapers

TABLE 2: UPPER SHELTER PERISHABLES

Type	Sp.#	Level	Material	No.
Basketry				
Type 1	1-13-4	13	Salix	1
Cordage				
Type 1	1-8/9?	8/9	Apocynum	1
Type 2a	1-9-13	9	"	8
	1-8-14	8	" ?	
	1-6-6	6	Juniperus?	
	1-7-8	7	Apocynum	
	1-5-3	5	"	
	1-8-17	8	"	
	1-6-7	6	Asclepias?	
	1-9-11	9	Apoc/Asclep.	
Type 2b	1-9-10	9	Artemesia	1
Type 3	backdirt		Apocynum	1
Type 4	3-1-3	1	Lepus sp.	1
Type 5	1-8-15	8	Pursia?	4
	1-9-5	9	Artemesia	
	1-11-6	11	Juniperus?	
	1-13-3	13	Artemesia	
Misc.	1-6-9	6	Apocynum	4
	1-9-6	9	Juniperus?	
	1-8-16	8	Artemesia	
	3-2-4	2	hide, deer	
Knotted Fibers				2
	1-9/12-2	9/12	Artemesia	
	1-6-8	6	Typha	
Composite Constructions				
Type 1	3-2-7	2	Salix	2
	1-6-15	6	"	
Type 2	1-17-2(5)	17	Salix	6
	3-2-5	2	"	
	3-2-6	2	"	
	1-6-10	6	"	
	1-17-3	17	"	
	1-9-9	9	"	
Type 3	1-6-14	6	"	2
	1-115	11	"	
Misc.	1-6-11	6	"	5
	1-11-5	11	"	
	1-9-8	9	"	
	1-9-7	9	"	
	1-6-12	6	"	
	1-6-13	6	"	

TABLE 2: UPPER SHELTER PERISHABLES (con't)

Type	Sp.#	Level	Material	No.
Misc. Wood				
Splint Loops	1-8-?	8	Salix	2
	1-11-5	11	"	
Cane Shaft	1-6-16	6	Phragmites	1
Pointed Sticks - large				3
	1-8-12	8	Salix?	
	1-14-1	14	"	
	1-16-17	6	"	
Pointed Sticks - small				1
	1-11-6	11	"	
Feathers	1-11-7	11	Colaptes auratus	2
	1-8-13	8	hawk	

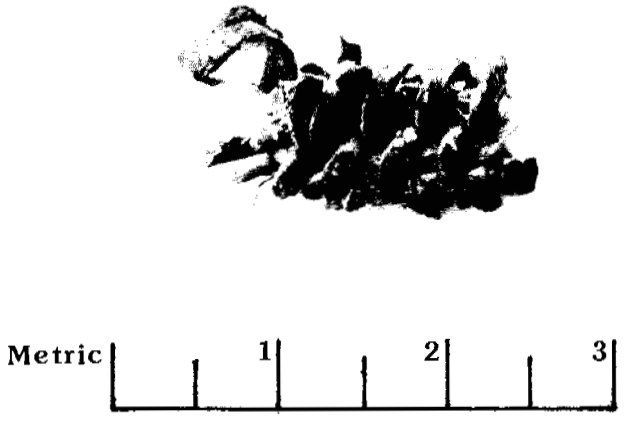


Fig. 15. Coiled basketry fragment (1-13-4).

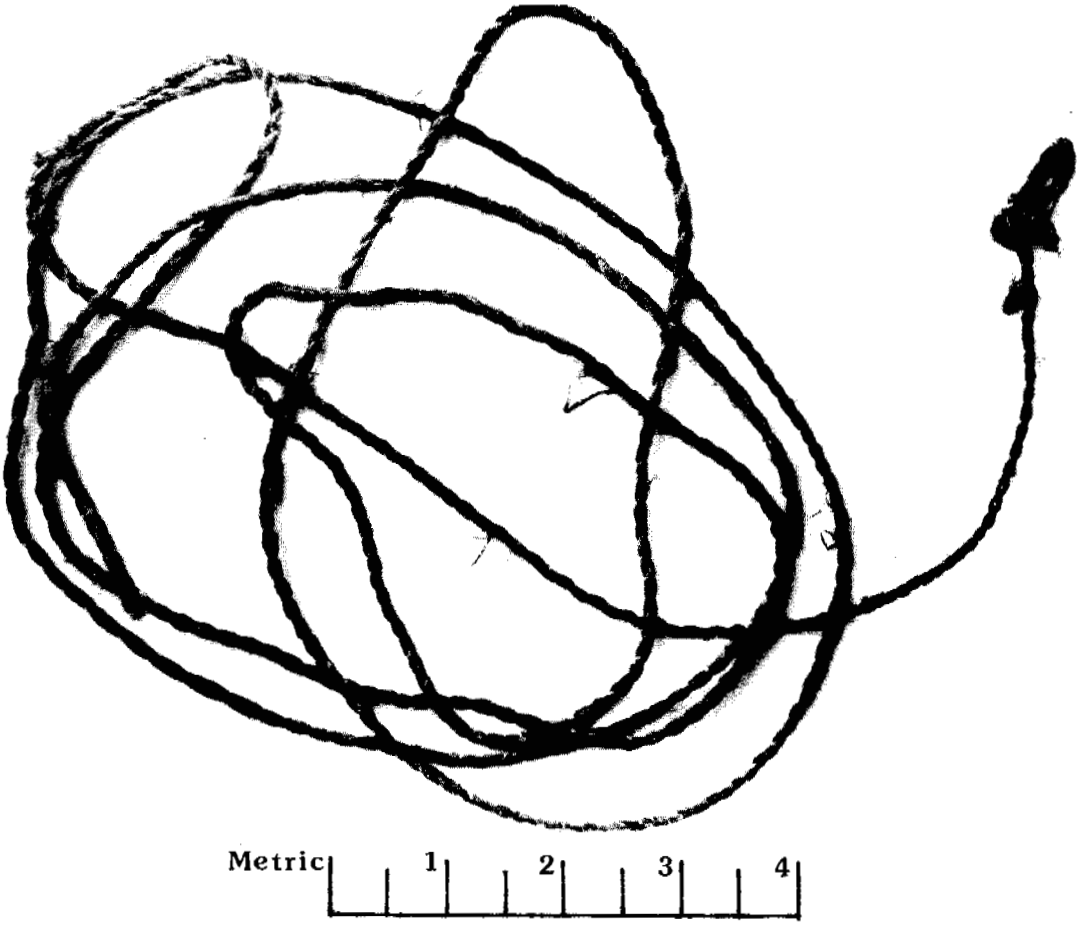


Fig. 16. Fine two-ply, S-spun, Z-twist cordage (1-8/9).

to the looped end. Measurements vary from .9 mm to 1.1 mm for the ply and from .5 mm to .8 mm for the strands. Although apparently incomplete, the piece may have served as a loop snare for small game or birds. No wear is apparent, however. This artifact is shown in the west wall profile of TU#1/2 (Fig. 5).

Type 2a. two-ply, Z spun, S-twist; moderate to tight, medium to fine. Number of specimens: 8 (Fig. 17-19).

The eight artifacts placed in this class include short lengths of cordage as well as obvious netting fragments. All are the same in basic fiber construction technique: two-ply, Z-spun, S-twist. All are also tightly spun. Diameters vary slightly, but all save one piece (1-8-14) would be classified as medium fine to fine cordage (1-8-14 is medium --3.3 mm. diameter, 1.7 mm. strand diameter). Three of the cordage specimens are knotted. One fragment (1-9-11) contains two weaver's knots, one at the end of the cord and the other 4.8 cm. beyond, near the center (Fig. 17). The end knot is crossed with a cordage fragment of a different fiber; perhaps Asclepias whereas the main cord appears to be Apocynum. Placement of the knots suggests this is a length of netting, with roughly a 5 cm./side mesh. Fragment 1-6-7 (Fig. 18) contains four weaver's knots, with three sides of a single diamond of mesh remaining intact. The sides measure from 1.2 to 1.5 cm, with the variation suggesting that the net was not made with a bone or wooden gauge, but rather, perhaps, using finger measurement. Wear, in the form of freyed fibers at the interstices of the ply, is apparent primarily on specimen 1-6-7. The remaining knotted specimen, 1-8-17, appears to be a nearly complete construction. A 137+ cm. piece of cordage is made into a three tiered section of netting by a looped knotting technique, as shown in Fig. 19. One end of the continuous cord starts with an overhand knot; the other end is also finished with an overhand knot, but over partially spun ends. The spinner may have intended to add additional fibers to this end at a later time. Although the cord itself is continuous, variations in thickness and some unspun fibers protruding periodically from the surface suggest splicing of new materials from time to time--probably when the original length of cordage was made rather than during net construction. The function of this piece is unknown, although it may have served in some way as a small game snare, perhaps being spread upright in a cottontail or bird run. Surface wear was not apparent.

Measurements: range of length of specimens in this category is 6.2 cm to 47.4 cm (excluding 1-8-17 above) for an average of 17.1 cm; range of diameter of ply is 1.6 mm to 2.3 mm for an average of 2 mm; range of diameter of strands is 1.1 mm to 1.7 mm for an average of 1.4 mm. Angle of twist is tight.

Type 2b. 2 ply, Z-spun, S-twist, medium thickness moderate twist. Number of specimens: 1

Specimen 1-9-10, a 17.5 cm. length of sagebrush bark (Artemesia tridentata) cordage, is separately classed for material, grade and twist rather than technique. Both ends of the piece are broken and its does not show wear. The cordage is well made, but definately heavier and of looser twist than pieces summarized under Type 2a.

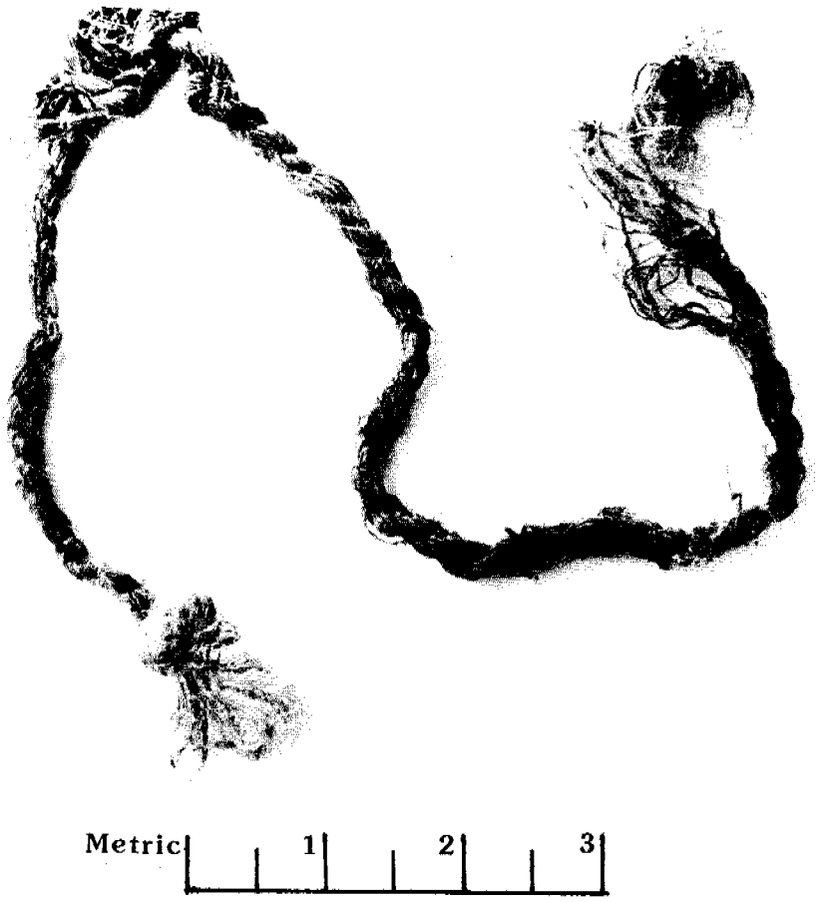


Fig. 17. Two-ply, Z-spun, S-twist cordage (1-9-11).

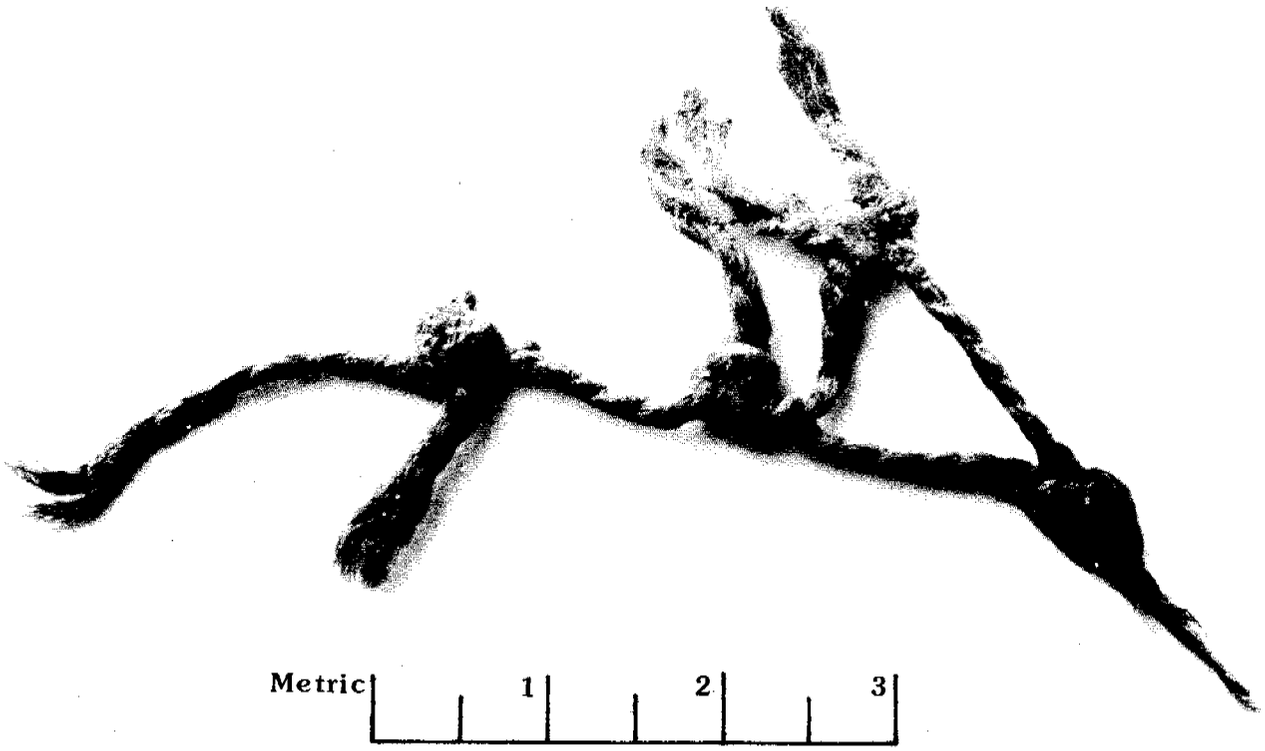


Fig. 18. Two-ply, Z-spun, S-twist cordage (1-6-7).

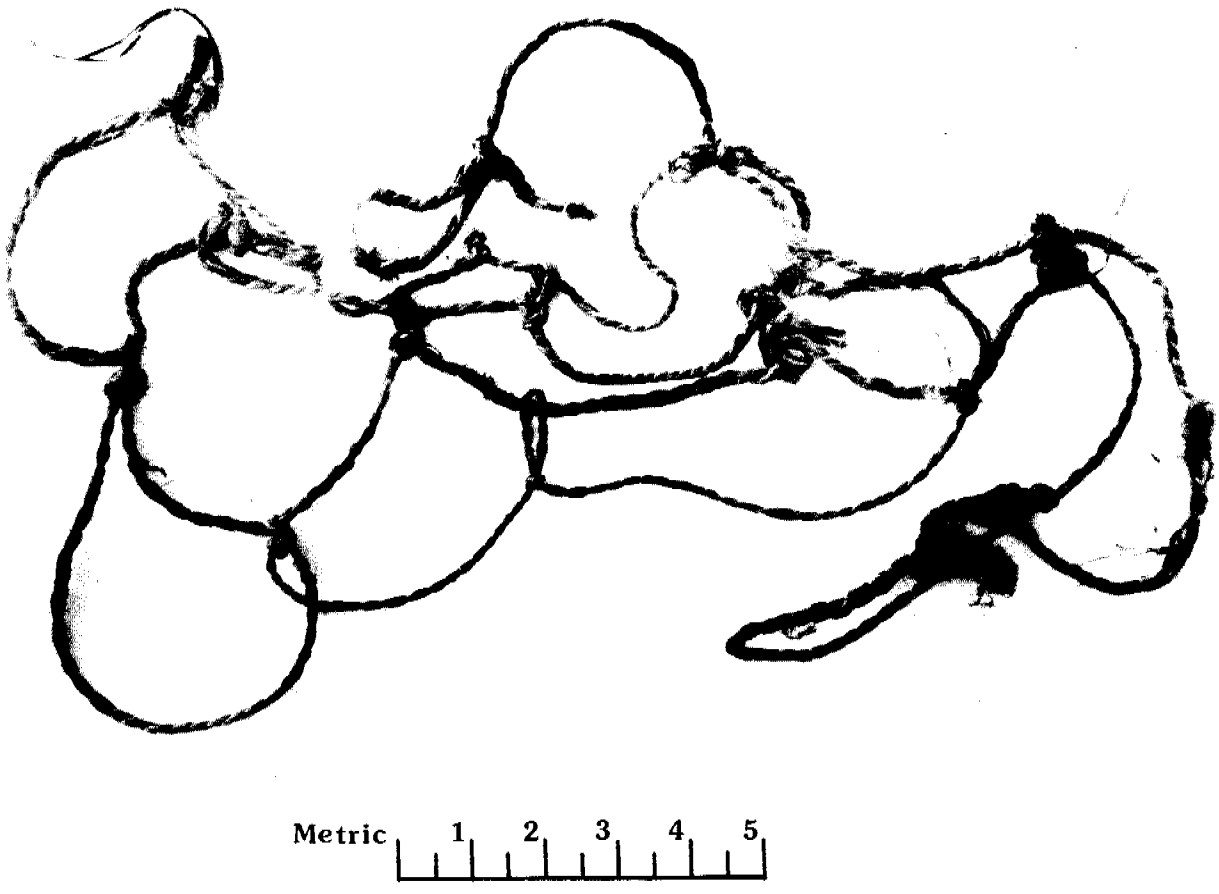


Fig. 19. Netting (1-8-17).

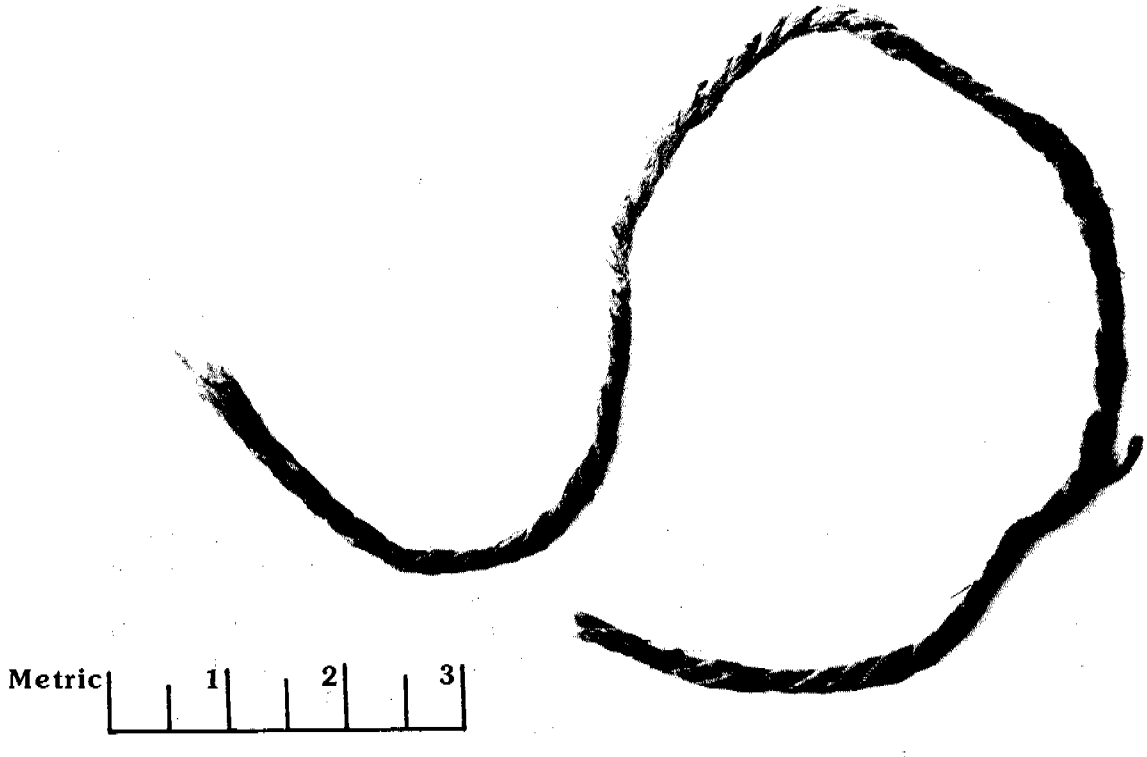


Fig. 20. 3-ply, Z-spun, S-twist cordage.
Found in vandal's backdirt.

Measurements: ply diameter is 5.2 mm; strand diameter averages 2.4 mm.

Type 3. 3 ply, Z-spun, S-twist, tight.
Number of specimens: 1 (Fig. 20)

An unnumbered specimen, recovered from a vandal's back dirt pile, is the only example of a three-ply cord from the site. It is broken at both ends, and shows few signs of wear. The piece measures 19.8 cm. long. The ply diameter is 2.4 mm, with each strand averaging 1.2 mm.

Type 4. 2 ply, Z-spun, Z-twist, animal skin.
Number of specimens: 1 (Fig. 21)

A single specimen of well worn twisted rabbit fur cordage was found at the site. It consists of two strands of hide, fur side out, spun and twisted together. They are not spun over a core. Two separate lengths of this type of cordage are tied together in what appears to be a square knot. The fur is matted and felted, but the twist appears to be tight for both lengths. The piece may have been warp for a rabbitskin blanket or cape, but no weft material is present to verify this. Tying knots is also not a common method of joining lengths of warp for blankets, at least among the ethnographically known Great Basin peoples.

Measurements: 13.5 cm. long; diameter of ply varies from 7 mm. to 1.2 cm, including the matted fur. Diameter at knot is 2.2 cm.

Type 5. 1 ply, Z-spun, light twist.
Number of specimens: 4 (Fig. 22)

One of these pieces, 1-8-15, is a true singles length of moderate to loosely spun bark fiber. The other three (1-13-3, 1-9-5, 1-11-6) are short singles, doubled back on themselves. Whether this was intentional, as for example preparatory to starting simultaneous spinning and plying of cordage, or accidental, the result of the cord doubling, is not known.

Measurements: range of length is 7 cm. to 13.2 cm. with the average at 10.1 cm; diameter of singles ranges from 1.1 mm to 5.7 mm. with an average of 3.4 mm.

Miscellaneous.
Number of specimens: 4

Four specimens, including one knotted leather (probably tanned) thong (3-2-4), and three pieces of shredded bark that may be preparatory stages in cordage manufacture, are lumped together in this category. The knot in the thong splices in another piece, but all ends are broken and thus its function unknown. Specimen 1-9-6 is a partially shredded bark sample, a piece of which has been loosely Z-twisted, while the remainder is largely unshredded or otherwise unprepared. Specimen 1-8-16 lacks twist, and is merely a length of partially shredded bark fiber. Specimen 1-6-9 appears to be the rather complete, but unshredded outer bark surface of a dogbane stem (*Apocynum* sp.). One end of the stem is charred. The latter three pieces may be materials in

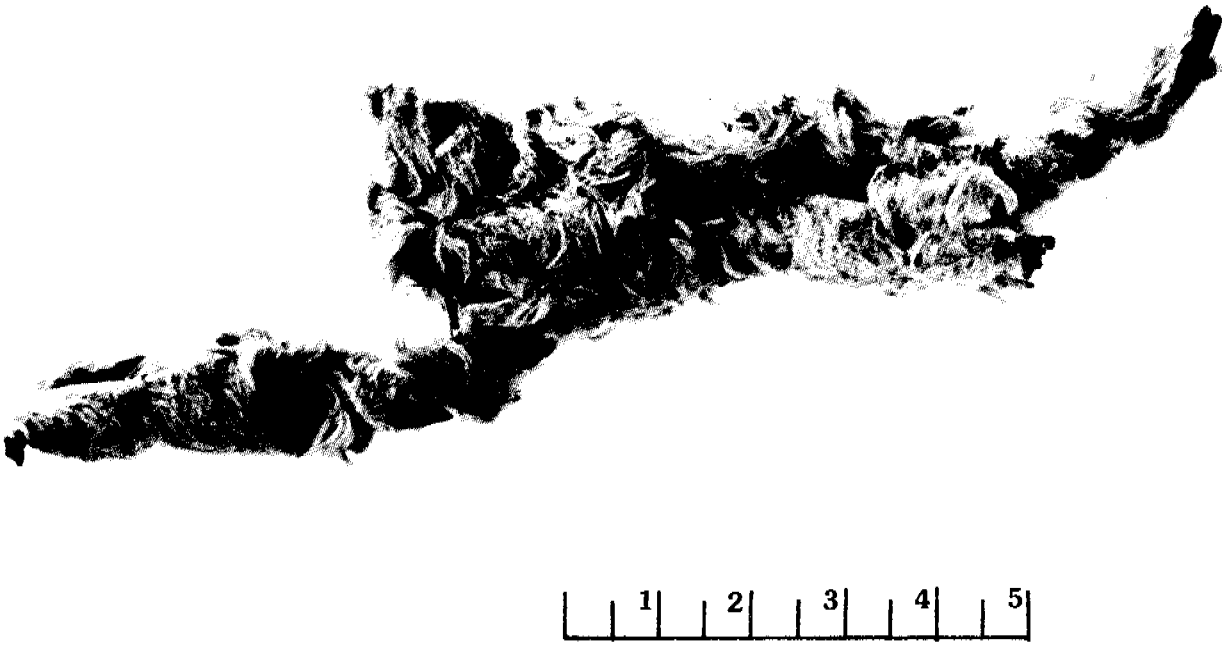


Fig. 21. 2-ply, Z-spun, Z-twist rabbit fur cordage (1-3-3).

Fig. 22. 1-ply, Z-spun, lightly twisted bark fiber (1-8-15).

stages of preparation toward cordage. The text excavations at Upper Shelter revealed other bark samples, but none where human modification was readily apparent.

Knotted Fibers

Knotted Fiber. Various constructions
Number of Specimens: 2 (Fig. 23)

Specimen 1-6-8 is a loosely S-twisted length of sagebrush bark with an overhand knot at one end. It is 74 cm+ in length and is charred at one end and also near the center, nearly totally severing the piece. The fibers have not been worked so as to separate them. The piece may have served as a ready tie. It is doubtful that it was either a slow match or tinder.

Specimen 1-9/12-2 consists of two short lengths of cattail, one tied in an overhand knot over the other. Both lengths are short (5.4 cm and 3.8 cm), broken at both ends, and badly decomposed. The function is unknown.

Composite Constructions

Type 1: Effigies
Number of specimens: 2 (Fig. 24)

Unique among the Upper Shelter artifacts are two "effigies" made of twisted and wrapped sticks. They are the same except for size: 3-2-7 is nearly twice as large as 1-6-15. Each starts with a long, straight stem of willow tapering to the growing tip. The large end of the stem is folded at a right angle about 7 cm. from the base. It is folded again at a 60 degree angle back to the main stem and wrapped around it a half turn. The remaining stem, to the tip, is then continuously wrapped around the right triangle by bringing it to the exterior surface. Given that the starting end of each piece is broken, it is impossible to tell whether these triangular structures represent whole or partial artifacts. The only comparable pieces were recovered by Cressman (1942) in southeastern Oregon (see External Relationships).

Measurements: 1-6-15 is 6.8 cm. long to the right angle and 2.8 cm to the acute angle. The wrapped section is 4.6 mm. to 6.5 mm. thick. Specimen 3-2-7 is 7 cm to the right angle and 6.2 cm. to the acute angle. The wrapped section is 6.6 mm to 9.1 mm. thick.

Type 2. Twisted sticks
Number of specimens: 6 (Fig. 25)

Five specimens, four of which are nearly identical, are made of two or three sticks folded in the center and twisted together at acute angles. Two of the specimens (3-2-6 and 1-6-10) are charred at the ends. The others have broken ends, with 1-17-3 consisting of the twisted portion only (other pieces were recovered with it, however). The function of these is unknown. They are not sections of basketry, and they seem not to be missing pieces of the "effigies" described above--however, it is possible that they are less obvious "parts" of these.

Fig. 23. Two short lengths of knotted cattail (1-9/12-2).

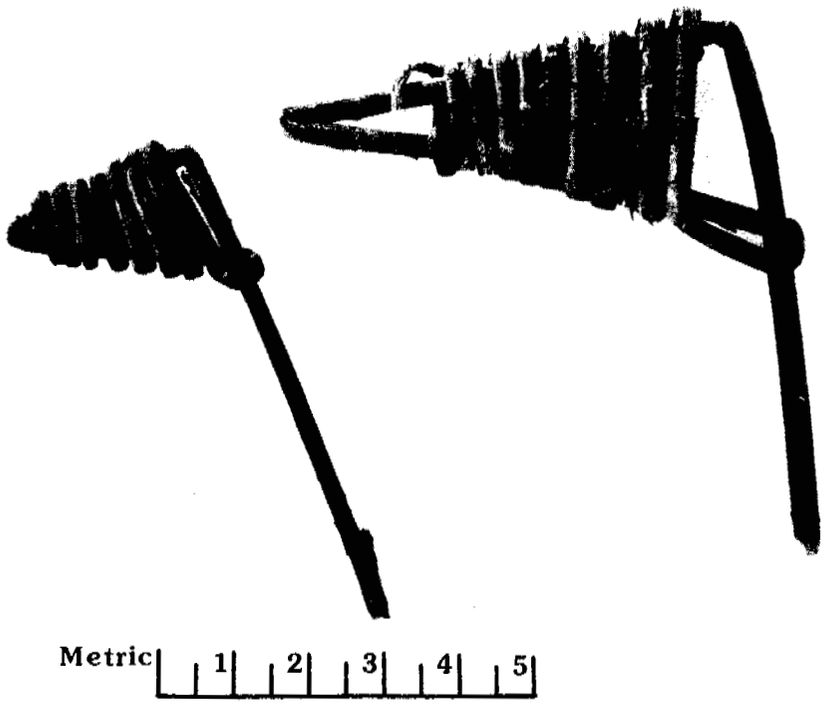


Fig. 24. Twisted and wrapped stick effigies (3-2-7 is larger, 1-6-15 smaller).

Fig. 25. Twisted sticks (left to right 3-2-6, 1-6-10, and 1-17-2).

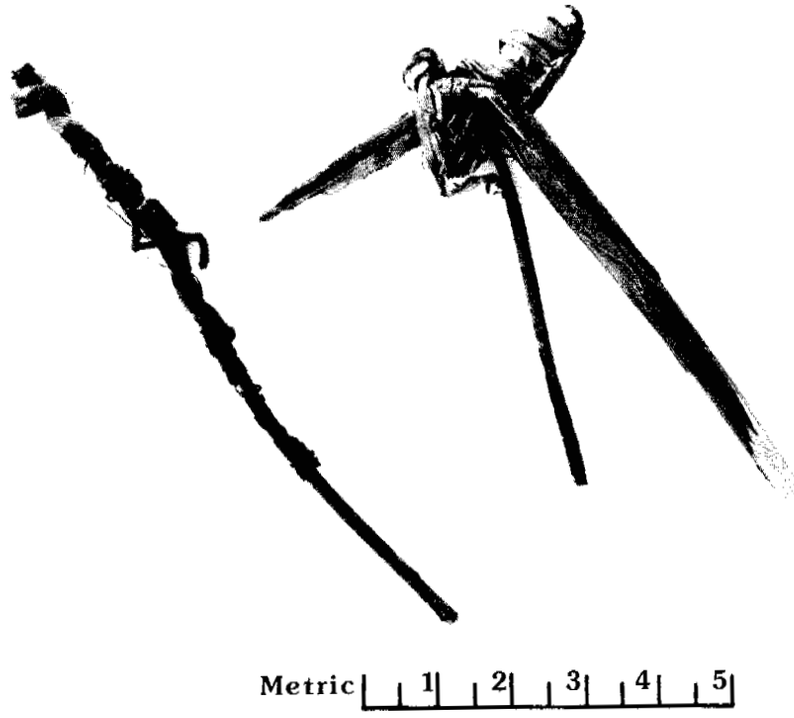


Fig. 26. Wrapped sticks (left to right 1-6-14 and 1-11-5.

Measurements: longest "construction" is 8.8 cm. and the shortest (obviously broken) is a 4 cm. Stock diameter averages 5 mm. Two (3-2-6, 1-9-9) consist of three sticks; three (1-6-10, 1-17-2(5) and 1-17-3) consist of two sticks.

Type 3. Wrapped sticks.
Number of specimens: 2 (Fig. 26).

Specimen 1-6-14 consists of a red willow stick 9.4 cm. long, broken at both ends, and loosely to tightly wrapped with a willow splint (S-twist). The split has not been decorticated and part of the bark has been split from the splint and wrapped in the same direction. A tiny whole rod is looped over the construction at roughly mid point. The original twig has tiny pre-emergent catkins, perhaps a clue to when it was taken. Stem diameter is 2 mm., the stem is slightly charred.

A second specimen (1-11-5) contains two halved willow sticks (probably pieces of the same stick) crossed and wrapped together with the outer bark of one section. The bark of the longest stick clings to the stick on its lower half. The bark is split from the wood near a break in the stick and Z-twisted for roughly 2 cm. It is then flattened and wrapped around the second stick so that the latter joins the other stick at a right angle. The function of the piece is unknown. It is wholely unlike the start of the two effigy figures described above. But, given that all ends of two main sticks are broken, it is possible that it was part of some larger figurine piece. The specimen measures 5 cm by 7.9 cm.

Miscellaneous
Number of specimens: 6

Table 2 lists the provenience of six specimens placed in this category. Each consists of a single bent or twisted stick, but to no particular pattern. None have any additional marks that would suggest their use as part of other constructions, such as baskets. All are broken. Two are charred at the tip.

Measurements: Range of length from 2.7 cm to 18.6 cm. with an average length of 8.4 cm. Range in diameter of sticks from 2 mm. to 8.7 mm.

Miscellaneous Artifacts of Wood

Splint loops.
Number of specimens: 2

Specimens 1-11-5 and 1-8-? are single, small loops made of willow splints. They may have served as edge bindings or wrappings securing rim rods to baskets (e.g., burden baskets), but neither shows constrictions as might be expected if these separated warp rods as in twining or lashed a rim rod in coiling. The rounded, outer surface of the splint in specimen 1-11-5, normally left to the exterior in basketry, is to the interior in this small loop.

Measurements: 1-8-? is 1 cm long, 5 mm wide and the splint is 4.7 mm. wide; 1-11-5 is 1.7 cm long, 9 mm wide and the splint is 4.7 mm. wide.

Cane shaft.
Number of specimens: 1 (Fig. 27).

One length of cane (*Phragmites australis*) 6.8 cm long was recovered from the site. One end is broken, but the other is quite clearly cut. A single cut mark across the surface may be modern. The brown color of the shaft may indicate heat treating, as is reported for most Great Basin ethnographic groups preparatory to straightening a shaft (Park 1933-1940). The shaft is 8.7 mm in diameter.

Pointed sticks - large.
Number of specimens: 3 (Fig. 28).

Three lengths of large sticks, broken at one end and pointed at the other, were recovered from the site. Although each was undoubtedly artifically pointed, either by cutting or by fire, all are now quite worn at that end. One (1-6-17) is heavily charred at both ends, while the other two (1-14-1, 1-8-12) are lightly charred or charcoal stained. All are of soft wood (probably willow) and all are decorticated. They may have served as fire sticks, for moving hot rocks, food, etc. It is doubtful that they were digging sticks, as none is of hard wood (mountain mahogany, greasewood, etc.)--unless availability in the region dictated the use of an inferior product.

Measurements: range in length from 14.1 cm long to 4.3 cm long with an average at 7.7 cm. Average diameter at thickest area is 1.5 cm.

Pointed sticks - small
Number of specimens: 1

A single split and sharpened willow stick was also recovered from the site. It is cut to taper to a narrow point and has a fire blackened tip. It is largely decorticated, although whether on purpose or by wear cannot be determined. The non-pointed end is broken. The function of the stick is unknown, although it is possible that it may be the broken tip of a trap trigger or other peg-type mechanism.

Measurements: 3.5 cm long by 4.5 mm. at the thickest point.

Feathers

Two artifacts of feathers were recovered from Upper Shelter. One (1-11-7) may have been part of a feather wand or plume. The other (1-8-13) is a split and cut feather shaft, probably used or prepared for fletching. Artifact 1-11-7 (Fig. 29) consists of seven contour (wing and tail) feathers and a patch of spotted breast or back feathers all of the Northern Flicker (*Colaptes auratus*). They were probably originally all cemented to a willow twig 2.4 mm. in diameter and 13 cm long which remains at the center. The cementing material has largely disintegrated. It may have been pitch. The twig

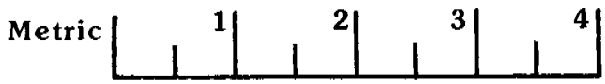


Fig. 27. Cane shaft (1-6-16).

Fig. 28. Large pointed stick (1-8-12).

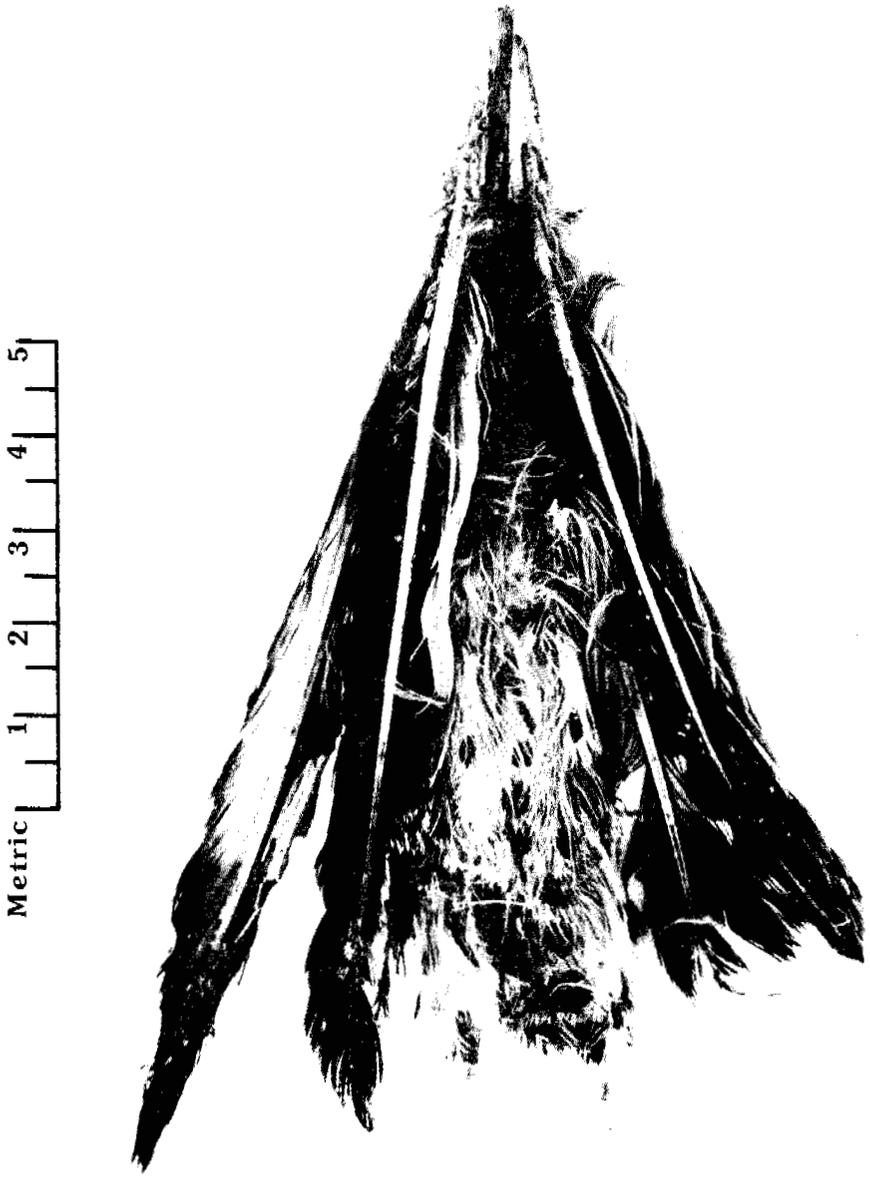


Fig. 29. Northern Flicker feather bundle (1-11-7).

protrudes 1.5 cm. at the base and nearly 2 cm. at the top. Both ends are broken. There is no evidence of any type of binding or wraping on the twig or feather bundle.

Artifact 1-8-13, a split contour feather probably of a hawk species, is 7.3 cm. long. The feather vane has been cut to trim, probably as it would be for fletching arrows or other projectiles. There is no evidence of lashing or wrapping, as both ends of the rachis are broken.

Internal Relationships

The small number of perishable artifacts (46) from the Upper Shelter test excavations allows for only the most general observations as to the nature and function of these technologies at the site. Even with reported data from the 1958 test excavations of Upper Shelter as well as adjacent South Fork Shelter by Heizer et al. (1968), the number of items is still small (+9). However, although the sample size is small, the diversity is considerable, suggesting that additional full-scale excavations of the site should yield interesting and varied materials indeed.

The single basketry fragment recovered from the 1985 test excavations is close coiled on a one rod foundation with split stitches on the non-work surface. Its position in level 13 suggests a data of roughly 1400 - 1450 B.P. (level 10, 1340 ± 60 B.P.; level 18, 1630 ± 60 B.P.). One additional piece recovered from the site and reported by Heizer et al. (1968:33) appears to be basically coiled on a single rod foundation (with some unclarified additions) and came from their 18 - 25 in. level. Although undated, the level also contained what was called a Cottonwood Triangular projectile point, a "late" type in the region. The illustration of this tool suggests error in this ascription. A diagonally twined basketry fragment was reported from South Fork Shelter by Heizer et al (1968:20) also from an upper undated level (18-24 in). The excavators remarked that it may have been intrusive in the level, being derived from a large pack rat nest in the wall of the shelter. With but the two fragments from one site and one from the other, one can only remark that basketry seems somewhat under represented at the site if indeed this were a site where subsistence activities included the gathering and processing of seeds, berries and other vegetable products. One might expect more basketry fragments of a more varied character, especially if arguing from analogy to known Western Shoshone basket types and their uses (Steward 1941; 1943). Unanalyzed residue from the Upper Shelter fragment may be derived from mush or berries.

Cordage, on the other hand, seems well represented at the site given the test unit size (16 pieces). An additional three pieces came from the 1958 test excavations (Heizer et al. 1968:33). Although roughly 50% of the cordage is from test levels 8 and 9, placing it at about 1300 B.P. in age, cordage of some type actually occurs from levels 1 through 13, making it a seemingly popular and useful artifact type (see Table 2). Type 2 cordage (2-ply, Z-spun, S-Twist) accounts for more than 60% of the total cordage fragments. Given that most pieces do not show a great deal of wear, this raises the possibility that cordage was manufactured and/or stored at the site.

Various composite constructions of sticks (usually willow, Salix sp.) seem common in the site as well. Most constructions are of one or more sticks twisted into various shapes and patterns, but of unknown function. Two additional artifacts of this type (and again of unknown function) were recovered during the 1958 test excavations (Heizer et al 1968:33). The 1958 test excavations also yielded two pieces of cane wrapped with sagebrush bark (18-24" level), an additional tip of a large pointed stick (30-36" level) and a classic "Promontory peg," all of which have parallels in other Great Basins sites. Of particular interest from the 1985 excavations were the whole twig "effigies", about which more will be said under "external relationships."

In terms of overall distribution in Upper Shelter, perishable artifacts occur from levels 1 through 17, but with roughly 70% coming from levels 6, 8, 9 and 11. All four of these levels are in Zone II, the area of dense organics, and the zone of best preservation. Feature 2, an apparent collapsed structure, is in this zone (level 9), as is an apparent living floor that contained several of the organic artifacts (level 11). Additional analysis of the total deposited artifacts from this level indicates considerable variety (see section on site overview). Radiocarbon dates on level 6 at 1210 ± 120 and level 10 at 1340 ± 60 B.P. nearly bracket these levels of obvious site occupation. Thus, with the exception of a few perishable artifacts, the assembledge from Upper Shelter is relatively late in time. The earliest perishables from the site are two pieces of Type 2 cordage from level 17, a level dated somewhere near 1630 ± 60 B.P. (level 18).

External Relationships

The Upper Shelter perishable artifacts bear a number of relationships to those of other Great Basin sites, especially in central and eastern areas. But again, the small sample size demands caution in drawing many specific conclusions as to directionality of relationships.

Basketry. The single analyzed fragment of basketry from Upper Shelter, a tiny piece that is close coiled on a one-rod foundation with split stitches on the non-work surface, seems to be most closely related to one-rod coiling from Danger Cave (Price 1957:245). Although work direction is not recorded by Price for this class, her figures 226 and 227 suggest that it is leftward, as is specimen 1-13-4 from Upper Shelter. At Danger Cave, this type has interlocking rather than split stitches. The type is found from Danger Cave Levels III through V, with a radiocarbon age range from roughly 1968 B.C. to 20 A.D. (uncorrected, Danger Levels II and I). The Upper Shelter specimen, from level 13, would fall between the dates 1630 ± 50 B.P. and 1340 ± 60 B.P. (levels 18 and 10, respectively), seemingly later than the Danger Cave pieces. However, the uppermost levels of Danger Cave V may also contain later deposits than the few dates indicate. A single specimen of basketry coiled on a one-rod foundation but with interlocking stitches (as at Danger Cave) was also recovered from James Creek Shelter, roughly 65 km. northwest of Upper Shelter. Dates there for the piece are between 1000 A.D. and 1100 A.D. (C. Fowler 1987). Dirty Shame Rockshelter, in southeastern Oregon, likewise yielded a single piece on a one-rod foundation, with interlocking stitch, also with late dates (Zone I: 545 A.D., 1585 A.D.; Aikens, Cole and Stuckenrath

1986: 6). The additional piece of coiled basketry recovered from Upper Shelter and reported by Heizer et al. (1968) may also be of this type, but the specimen was not reexamined. Basketry made on a one-rod foundation with either interlocking or non-interlocking stitches and occasionally split stitches is also known among the Western Shoshone, but is common among a wider group of western tribes as well (Steward 1941; Fowler n.d.). It is likewise reported as an Anasazi type (Morris and Burgh 1941:7). Basketry made on a whole rod foundation apparently does not occur at Hogup Cave, where single element materials are all 1/2 rod (Adovasio 1970:140). Nor is it found in the Monitor Valley sites of central Nevada (Adovasio and Andrews 1983).

Cordage. The Upper Shelter cordage is roughly comparable in quality and type to that from Hogup Cave (Aikens 1970), Danger Cave (Jennings 1957) and other Great Basin sites (Loud and Harrington 1929; Hattori 1982; Adovasio and Andrews 1983; Goodwin 1985; Andrews, Adovasio and Carlisle 1986). At Upper Shelter, cordage is predominantly fine 2-ply, Z-spun, S-twist (Type 2a, 2b). At Hogup Cave, although total numbers of S-twist versus Z-twist cordage are roughly equal, after 1250 B.C. S-twist dominates Z-twist by about 6:1 (Aikens 1970:120-21). At Hidden Cave in western Nevada, in the late occupation level (0-1500 B.P.) 2-ply, Z-spun, S-twist dominates 2-ply S-spun, Z-twist by a ratio of nearly 20:1 (Goodwin 1985:264). At James Creek shelter 2-ply Z-spun, S-twist also predominates (C. Fowler 1987). The small cordage sample from Monitor Valley in central Nevada is also all 2-ply Z-spun, S-twist. At Danger Cave, at roughly comparable dates, Z-twist and S-twist cordage are of nearly equal proportions (Jennings 1957:234). Thus, as to primary type, the Upper Shelter cordage seems to fall within the pattern of all the sites named except Danger Cave. At Dirty Shame Rockshelter, 2-ply S-spun, Z-twist clearly dominates, another major departure. Danger Cave, Hogup Cave and Dirty Shame Rockshelter also contain small amounts of 3-ply Z-spun and S-twist cordage, comparable to Upper Shelter Type 3.

Danger Cave, Hogup Cave and Lovelock Cave have all produced well preserved sections or pieces of netting containing weaver's knots (Jennings 1957:229-30; Aikens 1970:125-26; Loud and Harrington 1929:87-89). Although mesh size apparently varies at all of these sites, only Lovelock Cave seems to have produced nets with the comparable small mesh size of Upper Shelter specimen 1-6-7. None of these sites contained a specimen of knotted netting like specimen 1-8-17, the piece that may have functioned as a small game or bird snare. Twenty-six lengths of cordage with a loop at one end, apparently similar to Upper Shelter 1-8/9-1 were recovered at Hogup Cave, where they were also suggested to be small game snares (Aikens 1970:125).

Rabbit fur cordage of the 2-ply Z-twist variety (Upper Shelter Type 4) was also found at Danger Cave, Hogup Cave, James Creek Shelter and several western Nevada Sites. At Hidden Cave, the dates on fur cordage are primarily early (3600 - 3780 B.P.) and the cordage is all single ply (Goodwin 1985). At Danger Cave, most is from Danger Level V, the uppermost level, but with radiocarbon dates ranging from 4900 $\pm$ 500 to 1930 $\pm$ 240 B.P. At Hogup Cave, with the largest sample (145 fragments, two large pieces), these materials are found throughout the deposits (Aikens 1970:109). The Upper Shelter specimen is from Level 1 of test unit 3 and is thus probably quite late. The type is the same as materials from all the sites indicated except Hidden Cave. Fur

and feather cloth, often in the form of robes or blankets, is a well known component of Western Shoshone material culture, but is also widely distributed in the West and Southwest. It obviously was used over a long time span.

Composite Constructions. Of the various artifacts contained under this category, none is more intriguing than the two triangular "effigies" of wrapped twigs. As noted above, Cressman (1942:73) found 4 similar specimens in Roaring Springs Cave, southeastern Oregon, in the "basket-bearing level" (Level 1). Although the same in outline, the twig wrapping of the "bodies" of the Oregon pieces are in a Figure-8 rather than plain. Cressman refers to the Oregon pieces as "rattlesnake effigies", for the resemblence of the body to the snake's rattles (Cressman 1942:73).

Split twig effigies of animals are known from various eastern and southern Great Basin sites, where they are associated with the middle Archaic [dates on figurines from Stanton's Cave and Walnut Canyon, AZ, Etna Cave, NV, Newberry Cave, CA and Cowboy Cave, UT, cluster around 3500 B.P. (D. Fowler 1973:5; Janetski 1980:94)]. But construction of these appears to differ considerably from the Upper Shelter and Oregon effigies. At Upper Shelter, dates on the effigies are also more recent than on the classic split twig figurines. The two from Upper Shelter were found in Test Unit 3, level 2 and Test Unit 1, Level 6. Level 6 is dated 1210 $\pm$ 120 B.P. Whether the Upper Shelter and Oregon effigies are but partial figurines can't be ruled out, as the twigs upon which they are formed are often broken at the end. Artifacts of this order have not been described for the historic tribes of the Great Basin.

Wrapped sticks, such as Upper Shelter 1-6-14, seemingly are limited in distribution and are of unknown function. One very similar to the Upper Shelter specimen was found at James Creek Shelter where it was dated between 350 B.C. and A.D. 10 (Stratum IV). At Upper Shelter, the comparable piece was found in level 6, dated by radiocarbon at 1210 $\pm$ 120 B.P., somewhat later. Both pieces vaguely resemble the starts of the wrapped, horned figures from Hogup Cave (Aikens 1970:121), but there is no evidence that the Upper Shelter or James Creek pieces were ever meant to include appendages. A stick with whole rod wrapping recovered at Dirty Shame Rockshelter, termed a "doodle", is not quite comparable (Andrews, Adovasio and Carlisle 1986: 178).

Miscellaneous Wood, etc. Several miscellaneous artifacts of wood as well as feathers from Upper Shelter also show some similarities to pieces from other sites in the region. Short lengths of cane (Upper Shelter 1-6-16), as well as more complete shafts of cane come from Hogup Cave (Aikens 1970: 160-165, 168-70). Large pointed sticks, some with fire blackened tips, were also common in Danger Cave (Level V) and Hogup Cave (Jennings 1957:186; Aikens 1970:181-82). At both sites "tips" or broken ends of such sticks were also found. At Danger Cave, wood for these sticks was identified as *Cowania*, *Sarcobatus*, *Amelanchier*, *Salix* and *Cercocarpus*. At Hogup Cave, *Salix*, *Cercoparus*, *Artemesia* and *Sarcobatus* were most common. Sticks at both sites often lacked abrasion lines--to be expected if the sticks were used as digging tools. But some sticks may have so served--especially those of *Sarcobatus* and *Cercocarpus*, both hard woods. The others may have been used for fire pokers, etc.

The recovery of a single "Promontory peg" at Upper Shelter in 1958 by Heizer and crew (mentioned in a previous section of this report) also suggests some parallels to various Great Basin sites. Promontory pegs are common in several components of the Monitor Valley sequence (Thomas et al 1983:297). They are important in Level V at Danger Cave and in the upper levels of Hogup Cave (Jennings 1957:184; Aikens 1970:170). But they also have a much wider distribution in the Great Basin (Pavesic 1966; Wylie 1974; Thomas et al 1983:297). They are sometimes associated with snare bundles archaeologically (Schellbach 1927), suggesting at least one function as trigger mechanisms. Limited ethnographic occurrences also document this function.

The Northern Flicker feather bundle recovered at Upper Shelter has no known parallel in other Great Basin sites, although individual feathers, occasionally numbers of feathers tied together, and whole and trimmed feathers for projectile shafts have been recovered (Aikens 1970:118). The feather and fur wand from Lovelock Cave is much more elaborate (Loud and Harrington 1929:Plate 20), and obviously of another technological tradition. There is also the strange occurrence of a classic California-type flicker-feather headband in Mantles Cave, northwestern Colorado, in a seeming Fremont context (Hewes 1952).

Conclusions

The Upper Shelter perishables fit well with the artifact types and construction methods of several Great Basin sites. The basketry, although meager, late and somewhat non-distinctive, has parallels at Danger Cave and James Creek Shelter, as well as among the ethnographically known Western Shoshone. But it is also characteristic of yet a broader area, making specific parallels difficult to draw. Similarly, the cordage fits in technique, ratio and distribution into most western Great Basin assemblages. In frequency it is least like the materials recovered at Danger Cave. Various composite constructions, including the "effigies", have more northerly parallels, especially with materials recovered in southeastern Oregon. Most of the remaining material is too widespread in the Great Basin or is too non-distinctive to suggest directional relationships. The diversity of perishables from the test excavations at Upper Shelter, however, overwhelmingly suggest that additional excavations at the site should prove most fruitful for more fully delineating the nature and affinities of the perishable complexes.

Lithics

Projectile Points

Twenty-seven projectile points were recovered from Upper Shelter. Fourteen of these tools are identifiable according to recognized Great Basin arrow and dart point types. The other 13 items are too fragmentary for assignment to established types though in many cases they are identifiable as to arrow or dart point sizes.

Desert Side-notched (N=1; Fig. 30a): Following the testing of Upper Shelter, a Desert Side-notched point was discovered in the vandal's backdirt. This single specimen of cryptocrystalline silica (CCS) material is a classic Desert Series form, having straight blade edges; narrow, parallel sided notches; and, a slightly concave base with a small notch at its center. The distal end of the point is missing in a flat-faced fracture.

Eastgate Expanding Stem (N=3; Fig. 30b-d): Two of these points (Fig. 30b-c), found in excavation levels 11 and 15 of TU#1/2, are made with the characteristic straight to concave blade edges, square to slightly rounded barb ends with hafting notches traveling toward the distal tip, parallel to the basal blade edges rather than diagonally into the blade. The stems of both artifacts are slightly damaged but show evidence of expansion. The neck width at the top of both stems is 0.6 cm. One of the items has been reworked distally. The third specimen (Fig. 30d) is merely edge retouched ventrally and has convex sides with hafting notches that extend towards the distal end parallel with the basal blade edges. The stem has been snapped. The neck width is 4 mm. This item was recovered higher in TU#1/2, in excavation level 7. All three items were made of CCS materials.

Elko Series (N=6; Fig. 30e-j): These are characteristic Elko series points with straight to very slightly convex blade edges, wide medium depth corner notching oriented diagonally into the blade edges, and with stems slightly to markedly expanding. Four of these points (30e-h) have stems with straight bases, one (Fig. 30i) has an eared appearance, and another (Fig. 30j) is missing its stem. All but one of the specimens were recovered from TU#4. Three were recovered from above or in the top of the rock fall zone and two were recovered from below. One is associated with a Northern Side-notched point fragment from the excavation level above the volcanic ash. The one Elko point recovered from TU#1/2 was found with an Elko preform in Zone III. All six items are made of CCS material.

Pinto (N=2; Fig. 30k-l): One specimen (Fig. 30k) was recovered in Zone III of TU#1/2 and is whole, made of white CCS material. Asymmetry in the blade of this point suggests rejuvenation retouch. The other item (Fig. 30l), from the bottom of the rock fall zone in TU#4, is made of obsidian and is a stem fragment.

Gypsum (N=2; Fig. 30m): The illustrated tool has a markedly contracting stem fragment which terminates at a rounded point. The other item is very thick and, for this reason, may not be finished or a point. However, the careful pressure and percussion retouch on the stem and remaining portion of

the blade, plus the apparent impact fracture, all suggest it is a finished artifact. The relatively large thickness is due to step fractures along one portion of the blade. The illustrated white CCS specimen is from Zone III in TU#1/2, the other from the bottom of the rock fall zone in TU#4.

Large Concave Based (N=2; Fig, 30n, 31a): One white CCS item (Fig. 31a) is an impact shattered point with a wide relatively thin blade and, apparently, a wide shallow concave base. One undamaged basal blade edge has been dulled. Both projecting corners have been damaged as has one basal blade edge. One side has primarily percussion scars, the other has pressure. This item was found in excavation level 7 of TU#4, at the top of the rock fall zone. The other item is a seemingly anamalous point style (Fig 30n). It is considered a projectile point due to an apparent distal impact fracture. One blade edge shows the truncated scars of possible unifacial rejuvenation retouch. This tool is from Zone IV of TU-#1/2 and is associated with the 5790 B.P. date.

Northern Side-notched (N=1; Fig. 31b): A red CCS tang fragment was recovered exhibiting deeply concave basal edge characteristics and parallel sided side notches. It was found in excavation level 18 of TU#4.

Projectile Point Fragments (N=19): Nineteen projectile point fragments was recovered, including seven dart point fragments and four arrow point fragments. The remaining eight items are non-descript fragments which are included here due to fine pressure retouch. The dart point fragments were found in lower excavation levels, excavation level 18 of TU#4 as well as excavation levels 14 and 15. The arrow point fragments are from Zone I and II of TU#1/2 and excavation level 5 of TU#4. Fourteen other biface fragments were recovered which, through breakage or unusual traits such as extreme thickness or irregular outline are non-descript. They cannot be considered as points or preforms.

Perforators

Drills (N=3; Fig. 31c-e): Three CCS drills were recovered. One specimen (Fig. 31e) is identical to the drill type preform (Fig. 32d). Both of these specimens are from Zones I and II above the rock fill in TU#1/2. The bases of both artifacts are the wide hinge terminations of flakes and the bits are off center slightly, made on the proximal portions of the parent artifact flakes. Little retouch is associated with the bases. The other two drill specimens are from the bottom and below the rock fall layer in TU#4. One specimen (Fig. 31c) has been completely worked and has a markedly convex-sided almost circular body with a straight wide base, and shallow, wide corner notches. This specimen is broken and a lateral fragment is missing. The bit is 1.8 cm long and averages .8 cm wide by .45 cm thick. There is a double faceted rotational wear on the tip, the surfaces of both facets being roughly perpendicular to each other and removed from opposite sides of the bit. The other specimen (Fig. 31d) is the lateral fragment of an artifact with a markedly convex body and a shallow wide notch. Though made on a very different CCS material than the previous item, it otherwise would be identical to the missing lateral fragment of this tool. The dominant flaking on this tool fragment above the notch is unifacial.

Figure 30. Projectile Points From Upper Shelter

a. Desert Side-notched, CCS material (0-0-1), surface
b. Eastgate, white CCS (1-15-1), Zone II
c. Eastgate, CCS (1-11-4), Zone II
d. Eastgate, CCS (1-7-7), Zone II
e. Elko series, CCS (1-19-4), Zone III/IV
f. Elko series, CCS (4-6-4)
g. Elko series, CCS (4-7-7)
h. Elko series, CCS (4-7-8)
i. Elko series, CCS (4-15-5)
j. Elko series, CCS (4-18-1)
k. Pinto, white CCS (1-19-6(s)), Zone III/IV
l. Pinto, obsidian (4-14-6)
m. Gypsum, white CCS (1-19-5), Zone III/IV
n. Lanceolate, white CCS (4-7-4)

Note: Cross-hatching indicates surface of a specimen following heat-treating but prior to subsequent retouch.

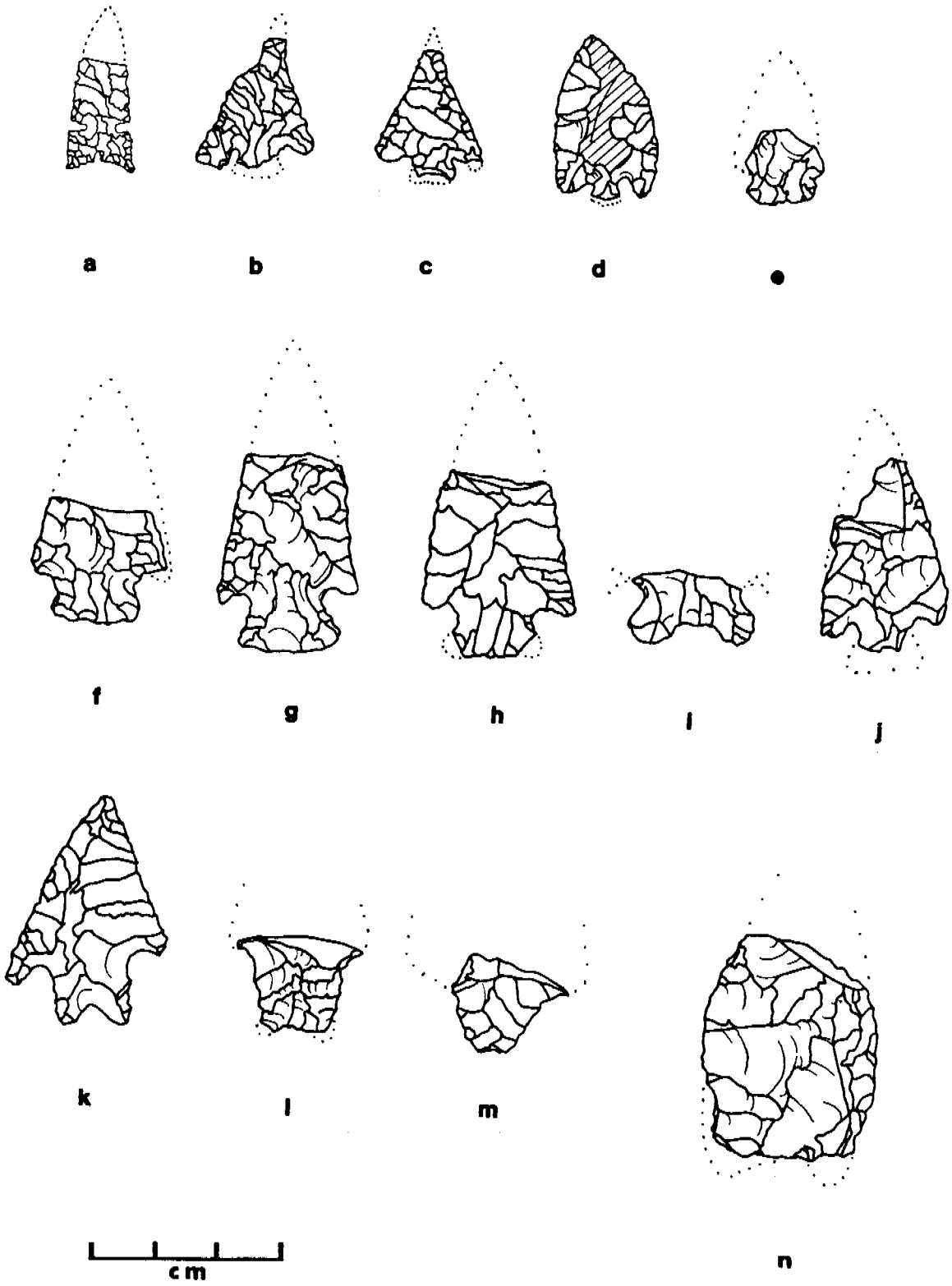

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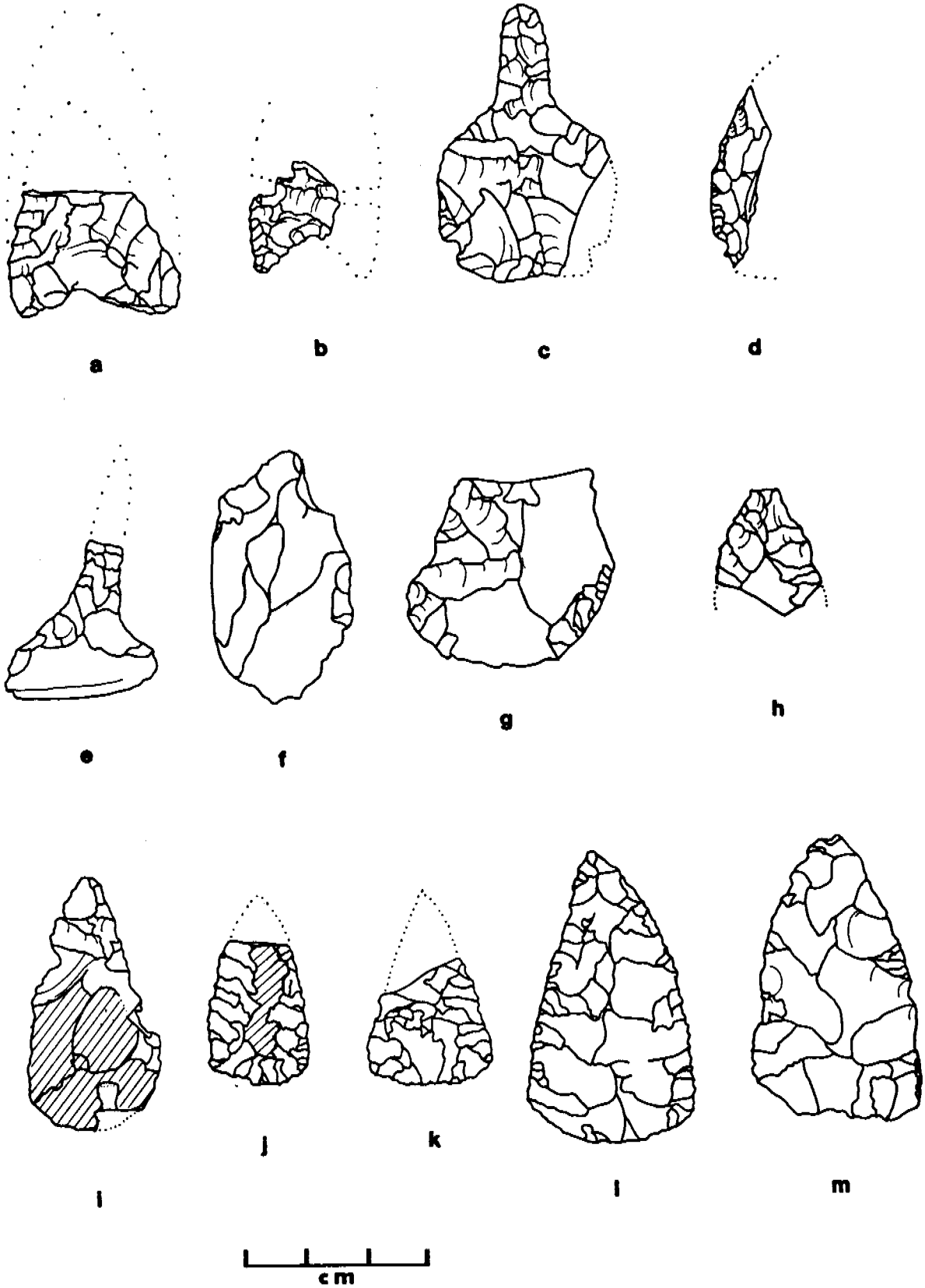
Figure 31. Bifaces from Upper Shelter

a. Lanceolate, white CCS (1-22-1), Zone IV/V
b. Northern Side-notched, red CCS (4-18-2)
c. Drill, CCS (4-16-6)
d. Drill, CCS (4-15-4)
e. Drill, CCS (1-17-2), Zone II from Feature 5.
f. Initial preform, white CCS (1-8-5), Zone II
g. Initial preform, CCS (4-4-3)
h. Initial preform, CCS (4-4-1)
i. Small generalized preform, CCS (1-8-7), Zone II
j. Small generalized preform, CCS (1-4-6), Zone I
k. Small generalized preform, CCS (1-8-9), Zone II
l. Large generalized preform, CCS (4-9-1)
m. Large generalized preform, CCS (4-7-3)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Preforms

A total of 38 bifacially worked preforms were recovered. This non-tool artifact class has been divided into three subclasses: initial; generalized; and, type preforms. This artifact class is primarily characterized by the presence of a manufacturing fracture, the lack of evidence of use as a tool, or certain morphological characteristics (cf. Bard et al. 1979: 41-48).

Initial preforms (N=8; Fig. 31f-h): The initial (or early stage) preform class consists of a heterogeneous group of items (Fig. 31f-h). The intended finished product is not clear from the discarded item. Seven are made of CCS and one is of unknown material. Only one (Fig. 31f) of these preforms is unbroken. Five of these items have been heated, two prior to retouch. Five have surface (invasive) retouch, three have only edge retouch. The original flake surface is present on both surfaces of seven of these artifacts. Zone II of TU#1/2 contains four initial preforms; another four come from TU#4, one from excavation level 3, two from level 4 and one from level 12.

Generalized preforms (N=25; Fig. 31i-m, 32a): Twenty-five generalized preforms have been separated into small and large classes. Bifaces in this category are distinguished by having at least one surface covered with flake scars, however the end product is still unidentifiable. The four smaller preforms include only one complete item (Fig. 31i) which is 4.2 cm long and weighs 3.2 g. The four items average 1.8 cm wide and .4 cm thick. All are made on CCS flakes, two of which are CR flake types. All have been heat treated prior to pressure retouch. The platform of the original flake is incorporated into the distal end of each preform. Three have surface retouch. The ventral surface of the original flake has not been obscured on any of the four, and the dorsal surface is visible on two. The complete preform has been traumatically affected by its pre-retouch heating which caused the flake removals to snap at the edge in some cases and crazing. The other three are proximal fragments (Fig 31j, k), one of which was apparently discarded after three overshot flakes removed both proximal corners and the tip. These preforms may have been intended as arrow points because of their size. One of these artifacts is from Zone I and two are from Zone II of TU#1/2. The other small generalized preform is from level 2 of TU#4.

Twenty-one large generalized preforms were recovered, including 20 CCS (Fig. 31l, m; 32a) and one obsidian specimen. Three were made from flakes, the others are unknown. Sixteen are broken. Twelve of these fragments are proximal, one is distal, and seven are non-diagnostic end fractures; there is one lateral fragment and two medial fragments. The mean measurements on four unbroken preforms from excavation levels 6 through 12 of TU#4 are 4.9 cm long by 3.0 cm wide by 0.7 cm thick and weigh 10.3 grams. Eleven of these artifacts are heated, one definitely prior to flaking; two have not been heated; and, eight are unknown. The platform of the original flake was at the distal end of the preform in the two cases where this attribute is identifiable. All twenty-two have invasive surface flake scars and eleven had identifiable pressure removals. One very large, thick preform from level 13 of TU#4 has core-like attributes, resembling a "quarry blank" with the beginning of percussion thinning removals (Fig. 32a). Ten of the 16 fractures present on these artifacts were identifiable as manufacture errors, two are a

combination of manufacturing fractures and traumatic heating, and four are ambiguous. In TU#1/2 two of these generalized preforms are from Zone I, five are from Zone II, one from Zone III, and the obsidian artifact from Zone IV. In TU#4 three are from above the rock fall zone and the remaining ten are from the levels which contain all of the complete preforms. In TU#4 two fragments, one from level 12 and the other from 14, fit together.

Type preforms (N=7; Fig. 32b-d): Five CCS type preforms differ from the generalized preforms by having features which identify the intended end-product tool type. Type preforms differ from finished tools by having attributes which are identifiable as being unfinished, the most common of which is a manufacturing fracture. One specimen (Fig. 32b) is an Eastgate point broken during notching. One edge has been reworked with unifacial invasive pressure removals. The other has not been repaired and has a distal fracture. This artifact was made on a flake heated subsequent to its removal from a core. Eastgate points are particularly susceptible to this type of lateral fracture with notching force (Spencer in Bard et al. 1979; Aikens 1972: 35). Generally in the northern Great Basin, Eastgate notches extend from the base parallel to the proximal blade edges rather than diagonal to the long axis as is common with the Rose Spring Corner-notched type. This artifact is from Zone II, TU#1/2, as are all the finished Eastgate forms.

Two separate fragments of an Elko series preform were found (Fig. 32c). The diagonal wide corner notch, a flaring stem, and a manufacturing fracture initiated at the base of this notch and traveling towards the distal end identify this artifact as an Elko series type preform. This artifact is from Zone III in TU#1/2. Another possible Elko series perform is a slightly concave-based stem fragment with a manufacturing fracture, laterally produced, initiated at the inner edge of the notch. This artifact is from Zone IV of TU#1/2.

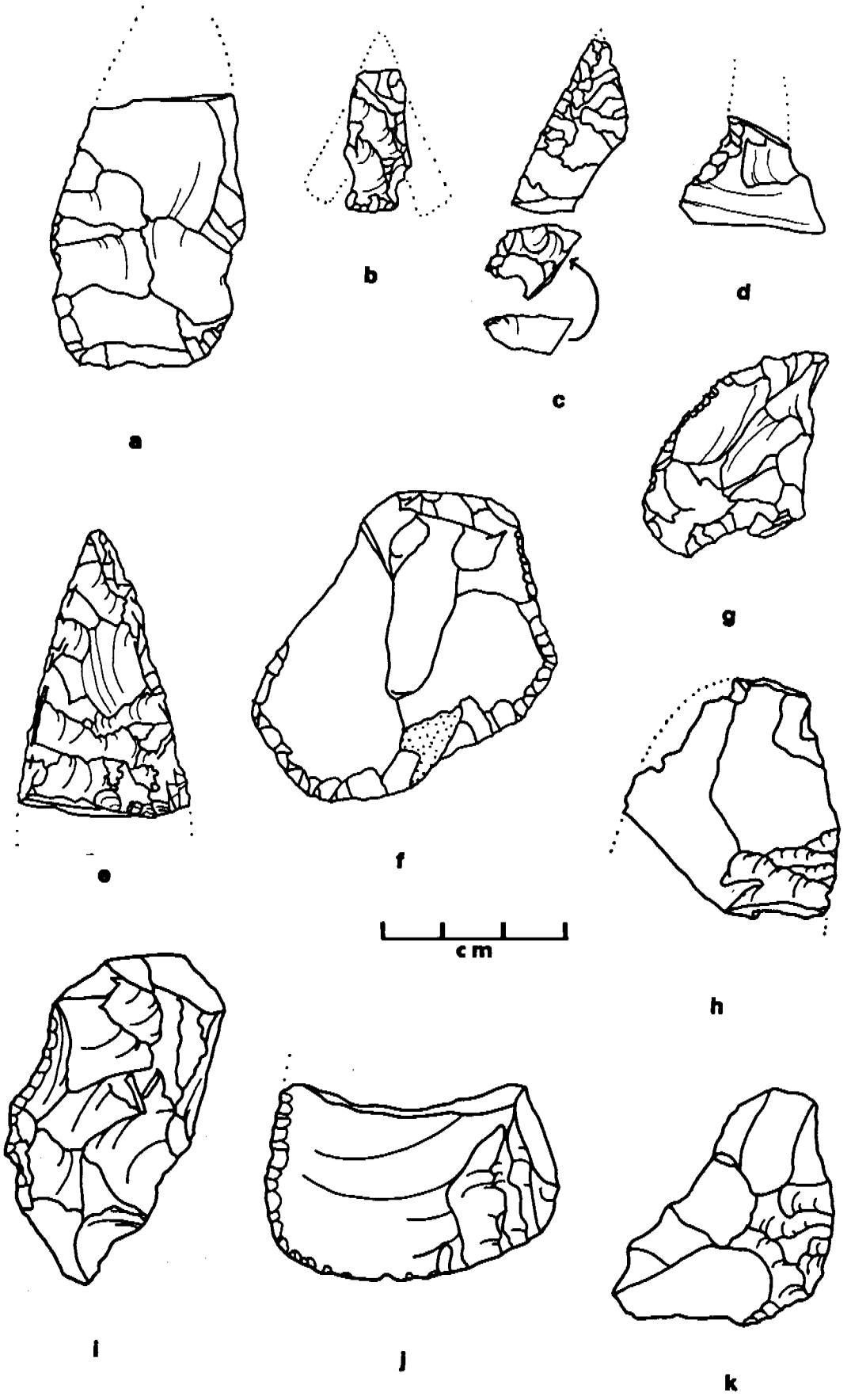
Two drill preforms are characterized by marked constriction of the blade opposite the base. One specimen (Fig. 32d) is identical to a completed drill from Feature 5. Like the finished tool, the parent artifact of this preform is a CR flake type with a wide-ended hinge termination. The distal flake termination serves as the base of the drill with retouch on both sides of the flake beginning above the widest portion of the parent flake. In both cases, the bit is angled off center slightly. A distal fracture led to the discard of this preform. The preform is from Zone I of TU#1/2. The second drill preform specimen has a percussion thinned base with irregular edges and a constriction. It is considered a preform because of the basal irregularity. This biface is from level 16 of TU#4. Completed drills were recovered from this level and the level above. Both drill preforms exhibit evidence of heat treatment.

Other Lithic Tools and Production Debris

Bifacial Slicing Tools (Fig. 32e-h): As a class, bifacially trimmed flake tools are distinguished by the presence of fine pressure retouch normally confined to edge modification, and often an overall size larger than that associated with projectile points. One specimen (Fig. 32e) resembles a "white

Figure 32. Bifacial preforms and modified tools from Upper Shelter

a. Large generalized preform CCS (4-13-5)
b. Eastgate type preform, CCS (1-11-3), Zone II
c. Elko series type preform, CCS (1-19-2 and 7), Zone III/IV
d. Drill type preform, CCS (1-3-2), Zone I
e. Bifacial tool, white CCS (1-18-1(s)), Zone III
f. Bifacially trimmed tool, CCS (4-17-1), from Feature 7
g. Bifacially trimmed tool, white CCS (4-11-1)
h. Bifacially trimmed tool, CCS (4-17-1)
i. Unifacially trimmed tool, CCS (1-9-2), Zone II
j. Unifacially trimmed tool, CCS (4-16-3)
k. Unifacially trimmed tool, CCS (1-20-3), Zone IV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knife". This tool has steep bifacial pressure retouch on both edges and converges to a point at one end with an amputation fracture at the opposite end. This artifact is from Stratum H at the top of Zone III. Other bifacially retouched slicing tools were found in Zone I and II of TU#1/2, and level 8, 11 and 17 of TU#4 (Fig. 32f, g). Another specimen (Fig. 32h), recovered from Feature 7 in TU #4, is a large CR flake with bifacial and unifacial pressure retouch on one edge. The association of this tool with the shell of Feature 7 suggests that it may be a prying/cutting tool used in preparing mussels.

Bifacially trimmed tools were also found in level 1 of TU#3. The material of one item resembles the core of local material recovered from this level. It exhibits bifacial percussion edge retouch and appears to retain residue.

Cores, Choppers, Hammerstones, Metates (N=17; Fig. 33a-g): The two choppers, one of CCS (Fig. 33b) and one of basalt (Fig. 33g) materials, are characterized by bifacial percussion flaking which produces large scars. They also lack the characteristic platform outerface overhangs of cores. Wear consists of relatively large nibble scars, and, in the case of one circumferentially retouched tool (Fig. 33b), quite heavy grinding and polishing along all edges. The original nodule form for both tools is quite evident. A third nodule exhibiting four flake scars, three of which originated from the same location and one scar produced from an impact point slightly off the previous detachment point, was also recovered (Fig. 33a). These flake scars produce a four faceted projection apparently used for smashing as was another natural projection. This bashingstone tool is distinctive from the choppers because a projection was utilized rather than an edge.

Another category consists of a rather amorphous group of nine CCS cores (Fig. 33c-f) and one basalt core. Each item has two or more platforms and is probably from locally available materials, although one may be from the Tosawihi area of north central Nevada. Seven are exhausted to various degrees. In TU#1/2 all cores are from zones I and II. The basalt core is from level 4 of Zone I where 6 pieces of basalt debitage were also recovered. Two cores are probably associated with Feature 5, matching in size, cortex appearance, and color/texture the large CP flakes from the feature. In TU#4 these artifacts came from throughout the depth, and no special significance can be attached to their provenience. One other CCS core was recovered from level 1 of TU#3.

Two hammerstones are flattened oval pebble-size stones with utilized edges. One specimen is associated with Feature 5, which also included cores and CP flakes. The other was found in level 2 of TU#4. Two metate fragments were also recovered, a basalt item from Zone II of TU#1/2, and a sedimentary specimen from level 17 of TU#4.

Unretouched Tools (N=35; Fig. 34): Similar to many sites in the Great Basin, the used flake is the most common tool type recovered (Fig. 34). These are tools with working edges formed solely by use and have not received retouch prior to use. Signs of this use must, of course, be visible. A total of 35 CCS items were identified. All three basic flake types were selected

for use with the most obvious wear being unifacial and located on the dorsal surface of the flakes. Some bifacial wear was observed, but more detailed inspection would be necessary to identify this less obvious form of wear. Three edges obviously contain residue of some kind and six others likely have residue. These unretouched flake edges indicate that cutting and scraping tasks were conducted at the site, possibly related to the preparation of fiber for cordage and the modification of wood, bone, and antler, and butchery.

Unifacially Retouched Tools (N=9; Fig. 32i-k): Nine CCS artifacts had some form of purposeful edge retouch, although quite limited in some cases. Like the use wear described above, the retouch is primarily located on the dorsal side of the tools (Fig. 32i-k). One of these unfacially retouched scraping tools has residue, and three others possibly have residue. Four of these tools were found in Zone II of TU#1/2 with one each from Zone I and Zone IV/V. One each were also found in levels 3 and 6 of TU#4. One last unifacially retouched CCS scraping tool was recovered from level 1 of TU#5. Two unifacially retouched biface preforms, both of CCS, were found at the bottom levels of TU#4.

Whole Flakes and Debitage (N=1055; Fig. 35): CCS, the dominant material in all levels of all units, is represented by a variety of raw material attributes including, color, opaqueness, and homogeneity of structure among others. A total of 1003 whole CCS flakes were segregated into three flake type categories (Fig. 35). "Whole Flakes" are lithic flakes which retain the platform, most of the bulb of force, or are complete. A core preparation (CP) flake is any flake with cortex on the dorsal surface rather than limited solely to the platform surface, if anywhere. This flake type generally has a thick, wide platform, a pronounced bulb of force, and pronounced dorsal ridges oriented to the long axis of the flake. A core reduction (CR) flake is any flake with no dorsal surface cortex or with a small amount of cortex retained distally in the area of the termination and which is not identifiable as a CP or a BTM flake. A biface tool manufacture (BTM) flake is any flake with a multifaceted platform, an acute angle between the platform and dorsal surfaces, a diffuse bulb of force, a continuous platform ventral edge lip, roughly parallel dorsal and ventral sides, and lateral edges which expand towards termination. All of these attributes need not be present for the categorization of the flake to the BTM class. For the CCS materials, the three flake types and other debitage consisting of flake fragments, angular waste and heat spalls were weighed and counted for each level in TU#1/2 and TU#4 (Table 3).

Bearing in mind the small sample sizes and the mixing and amorphousness of TU#4 deposits, some general patterns emerge. Not surprisingly, CP flakes have the largest mean size, followed by CR and BTM flake types. In TU#4, CP and BTM flakes are larger than in TU#1/2. In TU#4, BTM flakes are larger than CR flakes in several excavation levels. CR flakes are most common above the rock fall zone with BTM flakes more frequent in and below this zone. This situation is particularly pronounced in TU#4. CP flakes become dominant just above or in the top of the rock fall zone for one excavation level in both units. In excavation level 1 of TU#1/2 BTM flakes dominate whereas in TU#4 CP flakes dominate.

Figure 33. Cores and Choppers from Upper Shelter

a. Bashingstone, CCS (1-6-6), Zone II
b. Chopper, CCS (1-2-1), Zone I
c. Core, CCS (1-17-1), Stratum 11 from Feature 5
d. Core, CCS (4-6-1)
e. Core, CCS (4-16-1)
f. Core, CCS (1-8/17-1(s)), Stratum 11
g. Chopper, tabular basalt nodule (1-6-5), Zone II

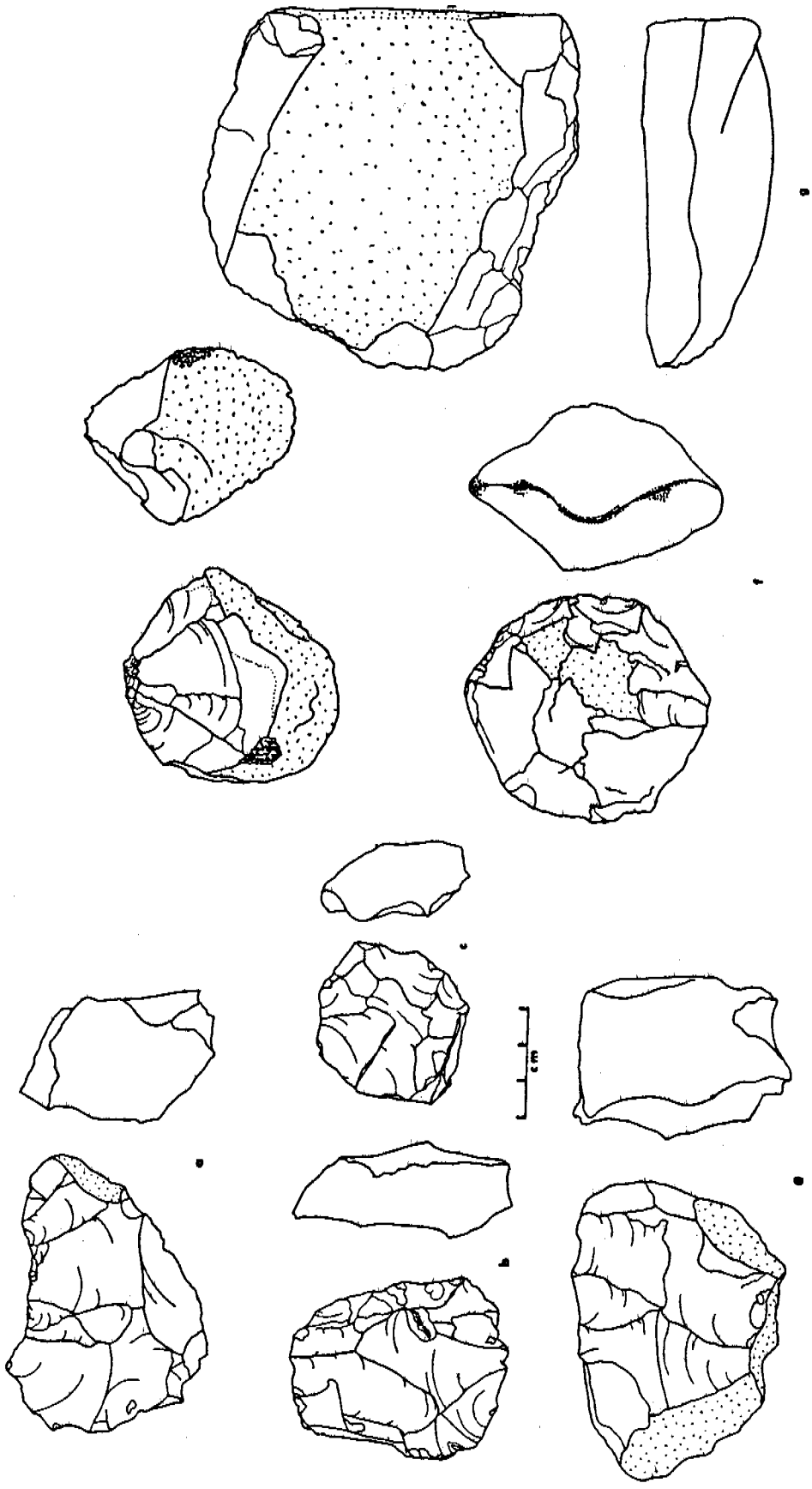
cm

Figure 34. Unretouched CCS Flake Tools From Upper Shelter

a. (5-1-1)
b. Zone II (1-7-3)
c. Zone II (1-6-1)
d. (4-16-4)
e. Zone II (1-7-2)
f. Zone I (1-4-1)
g. (4-12-2)
h. Zone II (1-9/12-1)
i. (4-4-2)
j. (4-3-2)
k. Zone II (1-8-3)
l. (4-18-1)
m. Zone II (1-13-1)
n. (3-2-1)
o. Zone II (1-8-2)
p. (4-7-2)

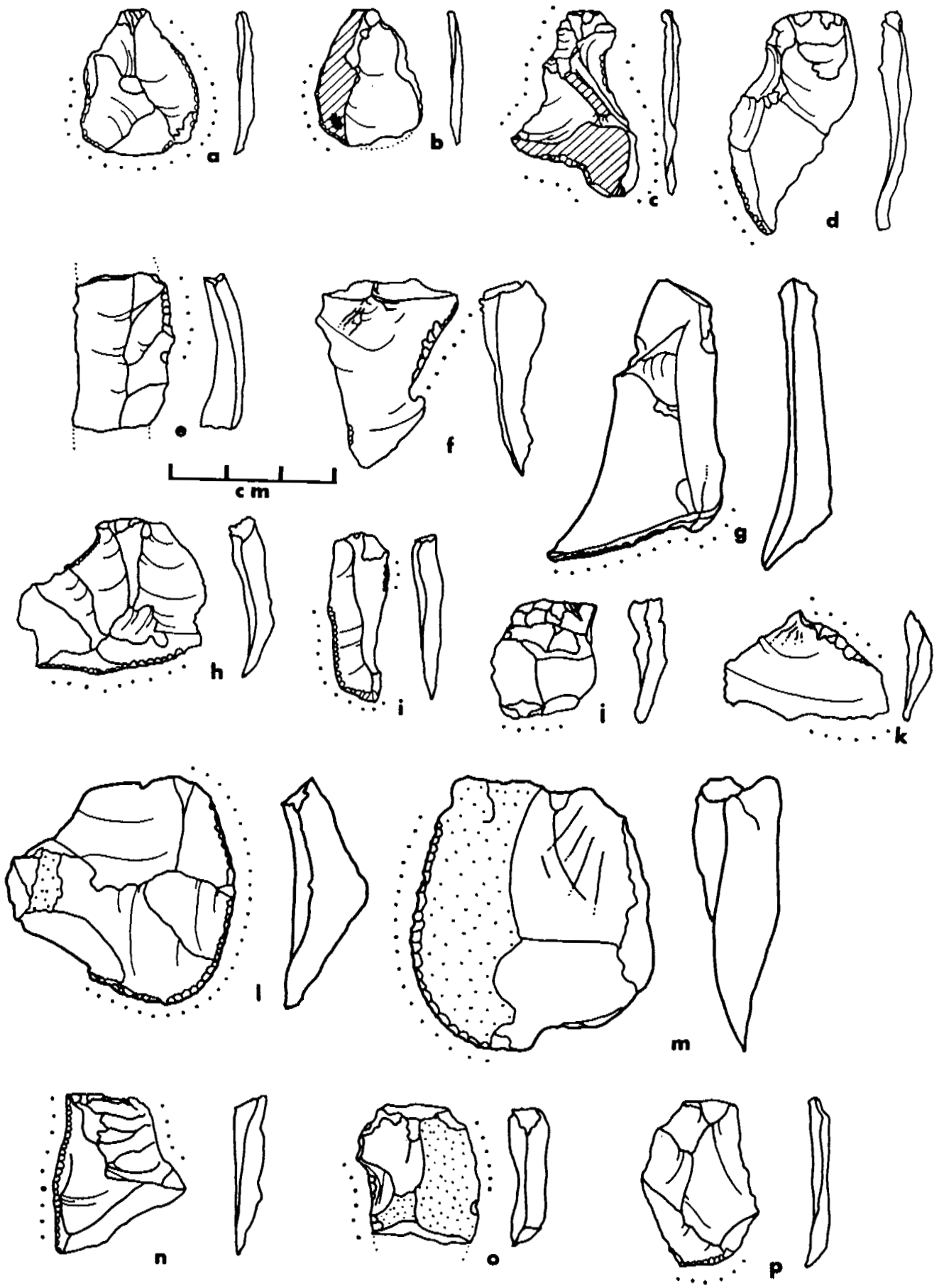
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Figure 35. Flake Types From Upper Shelter

a-c Core preparation (CP) flakes
d-j Core reduction (CR) flakes
k-t Bifare tool manufacture (BTM) flakes

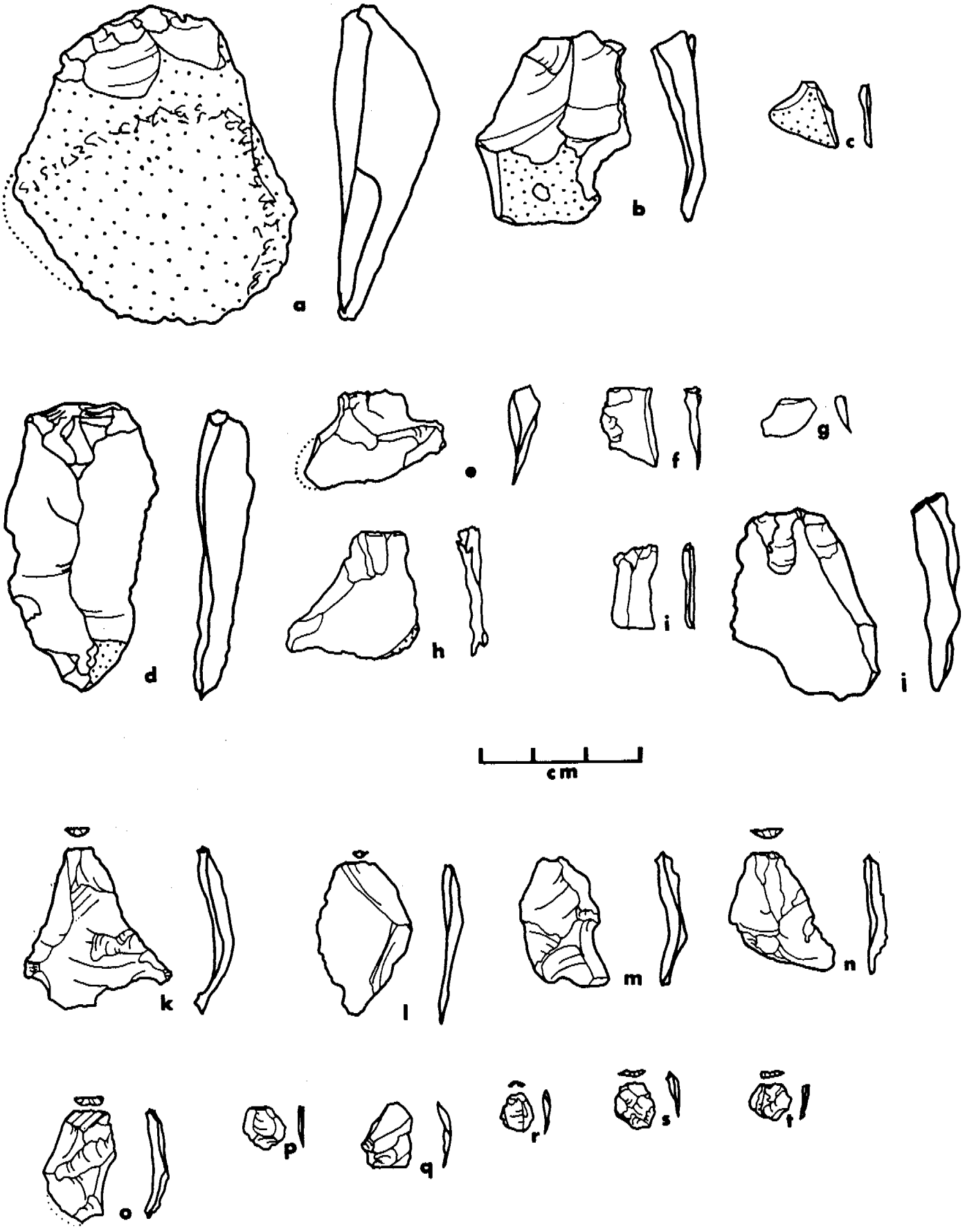
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Table 3. Occurrence of CCS flake types and debitage fragments for each excavation level of test units #1/2 and #4, and total CCS debitage weight for each level. (CP= core preparation flakes; CR= core reduction flakes; and BTM= biface thinning flakes)

	CP Flakes		CR Flakes		BTM Flakes		Debitage Fragments		Total Weight	
exc. level	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4
1.	0	11	4	8	4	4	10	32	11	127
2.	1	2	3	15	5	6	8	43	9	76
3.	3	3	9	5	23	6	39	33	41	149
4.	7	6	30	10	20	2	97	34	34	138
5.	10	7	7	16	15	11	50	36	79	101
6.	16	4	19	15	7	5	42	48	330	87
7.	7	15	13	22	3	8	37	70	89	124
8.	21	--	17	12	13	5	32	65	160	73
9.	9	2	18	6	5	10	54	47	174	69
10.	1	2	2	4	4	5	6	42	7	61
11.	7	8	22	13	8	8	53	44	120	169
12.	1	5	0	24	4	16	3	131	4	458
13.	4	7	9	22	6	50	20	244	25	445
14.	--	6	--	18	--	51	1	374	1	221
15.	1	7	6	16	--	18	19	119	61	358
16.	2	2	8	13	4	24	6	269	91	161
17.	15	--	6	6	1	7	9	58	214	91
18.	6	4	18	5	14	6	52	41	155	33
19.	8	1	15	1	39	2	141	19	217	5
20.	1		17		12		75		48	
21.	--		--		2		6		5	
22.	2		1		4		7		18	
23.	--		--		--		6		110	
24.	1		4		--		12		98	
Total	123	92	228	231	193	244	785	1749	2101	2946

Table 4. Occurrence of obsidian flake types and debitage fragments for each excavation level of test units #1/2 and #4, and total obsidian debitage weight for each level. (CP= core preparation flakes; CR= core reduction flakes; and BTM= biface thinning flakes)

	CP Flakes		CR Flakes		BTM Flakes		Debitage Fragments		Total Weight	
exc. level	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4
1.										
2.										
3.										
4.										
5.				1						2
6.						1				1
7.										
8.										
9.				1						1
10.								1		1
11.										
12.						3				1
13.						5		7		1
14.						5		9		1
15.						1		1		1
16.						3				1
17.										
18.			2				2		2	
19.					11	2	13		3	1
20.					2		1		1	
21.										
22.					1				1	
23.										
24.					1		1		1	
Total			2	2	15	20	17	18	8	11

Obsidian debitage occurs infrequently in TU#1/2 and TU#4 and is absent in TU#3 and TU#5. Occurrence of the 42 items corresponds with the top of the rock fall zone and below, similar to the occurrence of large triangular dart points. Table 4 gives the quantity of whole flakes and debitage pieces category and total weight of flake waste material for each level in each test unit. No whole obsidian CP flakes were recovered. The mean size of CR and BTM flakes are equivalent. These flakes are significantly smaller by average than their CCS counterparts, falling into the lower end of the CCS size range. The majority of obsidian flakes in both units are BTM types, primarily in the form of edge retouch flakes.

Ten basalt whole flakes and other pieces of debitage were also recovered. Of the four whole flakes, three are CP flakes from TU#1/2, one from excavation level 5 in Zone I and two from excavation level 11 in Zone II. The remaining whole basalt flake is a CR type from TU#4, found at the bottom of the rock fall zone in excavation level 14. The other six pieces of basalt debitage were found in Zone I of TU#1/2, three each from excavation levels 3 and 4.

Raw Materials

A review of chipped stone raw material types reveals that two forms of CCS material dominant the assemblage. One is highly translucent, fine grained, white to clear CCS with a chalky white, coarse cortex. This type conforms to a variety locally labeled as Elko Hills Chert with sources found nearby (Armentrout and Hanes 1987). The other common variety at Upper Shelter is a light gray to off-white, almost opaque, coarser textured CCS with dark (sometimes brown) speckled inclusions and a smooth, shiny greenish-gold cortex. Though the two types appear distinct in the artifact assemblage with no specimens revealing an intergradding of attributes, they may actually occur geographically together and hence are variations of the same basic type found in many locations around the upper Humboldt River basin.

A tendency noted in the debitage is that the large CP flakes are frequently the coarser grained variety, whereas BTM and CR flakes are more frequently of the Elko Hills form. Most notable was the recovery of a large chunk of the former material from level 23, a core and drill fragment from level 17, another chunk from level 8, and a core in level 3.

Other materials found less frequently in the assemblage include volcanic glass and white Tosawihi chert. Volcanic glass is predominantly ignimbrite with some obsidian, such as biface found in level 20 of TU#1/2. Tosawihi occurs primarily as completed tools: the mule-eared lanceolate, a Gypsum point fragment, two Eastgate points, and a point fragment. This pattern of Tosawihi occurrence is duplicated at James Creek Shelter (Elston and Budy 1987), the Susie Creek area (Armentrout and Hanes 1987), and the Carlin sites (Rusco and Jensen 1979). However, unlike findings at these other local areas, Elko Hills material also was present as refined bifaces at Upper Shelter.

Summary

The temporal sequence of points from Upper Shelter conforms with trends noted generally for the Great Basin. In TU#1/2 and TU#4 the earliest point

styles include the Northern Side-notched, Elko, and concave based lanceolate types. The Northern Side-notched form is represented by a single damaged specimen recovered within 20 cm above the ash layer and associated with the 5800 B.P. date. Occurring next within the deposits are Pinto, Gypsum, and Elko types from deposits dated between 5800 and 1500 BP. In TU#4, Pinto and Gypsum points have a more restricted temporal range than Elko forms corresponding to the early time of Elko use, a pattern similar to the Gatecliff Shelter sequence of central Nevada (Thomas 1983). Elko series forms, the most recent Archaic large triangular dart points to occur in TU#4, are found no higher than at the top of the rock fall zone which is also their most common occurrence in TU#1/2. The Eastgate style, the most recent point type found in the deposits, is stratigraphically discrete from the Elko forms in this testing. Only one Elko was found with the Eastgates during the 1959 testing. Eastgates at Upper Shelter correspond with Zone II, dated in TU#1/2 between 1500 and 1210 B.P. The Desert series point styles were represented by a single side-notched specimen found in the vandal's backdirt pile. A single Cottonwood form was found during the 1959 testing of Upper Shelter. It is unclear whether the earlier recovered form is a small preform or a finished projectile point. Only three Cottonwood forms were recovered from South Fork Shelter deposits, occurring with Eastgate and Elko forms in the 18-24 inch level.

The proportion of broken tools and other artifacts to whole specimens is quite high at Upper Shelter. Only one complete projectile point was found, a Pinto form from Zone III, TU#1/2, and even it shows evidence in its asymmetry of reworking. One drill from level 16 of TU#4 may be complete. Utilized flakes and unifaces are the only tools commonly complete. The high index of fragmentation suggests that people who visited the site came and went with their curated lithic tool kits intact. All complete tools other than the unretouched tools, unifaces, and bifacially trimmed flakes were curated. This absence of undamaged bifacially retouched tools suggests that the unretouched tools and the retouched unifaces at Upper Shelter were often viewed as fortuitous, expedient tools by the people who used and discarded them. This situation suggests that use of this site was as a temporary, or short term occupation, and not as a long term base camp. If the supposition that people came and went from the site with there tool kits intact is correct, then this would suggest that Upper Shelter was one of possibly several local sites where similar activities took place.

Pottery
(Fred Frampton)

Six sherds of pottery were recovered from the excavation, three from vandal spoilage, and eight more from the spoilage after the completion of excavations. Of the excavated sherds, four fragments were found in Zone I of TU#1/2 and two from excavation level 1 of TU#4. The latter two fragments fit together. Twelve of the sherds, five from excavation and seven from backdirt piles, were inspected in detail. All pieces appear to be Numic brownware, probably of Shoshone origin. They appear to represent six or fewer vessels. In most cases neither surface of the sherds varied sufficiently to indicate vessel form based on surface treatment. Two sherds were markedly curved and probably represent the necks of jars having restricted orifices. A single very small sherd appeared to be smudged and lightly polished on the interior and may be considered a bowl fragment. Vessel bases, which are useful in determining vessel form, were not present in the collection.

The sherd cores and surfaces indicate that the vessels were constructed by coiling and smoothing, or light scraping. It is possible that the vessels were smoothed with the fingers as they exhibited abundant horizontal, and occasionally vertical, light striations. One sherd had horizontal, linear, low and high points, or ridges, on the exterior perhaps representing coils which had not been fully obliterated.

Carbonaceous residue appears variously on sherd interiors and exteriors. This residue may be the result of cooking fires, food residue, or, more than likely due to the fires so evident in Zone I deposits. The coloration of the sherd surfaces indicates an uncontrolled and oxidizing firing atmosphere with the clays exhibiting brown colorings due to the iron content. The Upper Shelter ceramics show two general patterns of tempering. In one, the tempering agents are quartz sand, either clear or opaque, with small amounts of mica being occasionally present. The other temper constituted abundant fine particles of mica with lesser amounts of quartz sand. Few ceramic artifacts have been found in the Elko area and fewer have been closely inspected. Consequently, it is premature at this time to place a geographic boundary or even a place of origin on these temper types.

Bone And Shell

Waste

Weights of bone and shell recovered from each excavation level of TU#1/2 and TU#4 were determined separately and are shown in Table 5. As described earlier in the report, mammal bone was segregated into three categories to produce course grained comparisons for this testing operation. Only fish and bird bone fragments were individually counted. The primary comparison among excavation levels uses the bone and shell weight. It was not a goal of this project to further distinguish these wastes. For instance, more than one species of river mussel may be represented in the deposits, but no attempt was made at this time to distinguish the different types. The sensitivity of individual mollusks species to local environmental conditions, their relatively fast growth, and the differential ecologies of the two most common

Table 5. Bone and shell debris recovered in test units #1/2 and #4 by excavation level. (Weights in grams given for mammal bone and shell; counts given for bird bone and fish)

Level	bird(#)		fish(#)		mammal(gm) small		mammal(gm) large		shell(gm)	
exc. level	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4	TU 1/2	TU 4
1.						2	160	12	2	56
2.					5	11	5	4	1	102
3.			1		6	5	28	48	3	58
4.					22	6	89	43	48	41
5.	1	1			5	13	30	33	88	20
6.	1		1		20	11	70	50	101	16
7.					5	4	24	44	24	28
8.			3		4	3	45	19	46	24
9.	3		1		20	2	54	82	6	6
10.						1	6	33	3	6
11.					14	1	13	28	80	14
12.					2	2	12	60	194	4
13.					4	1	76	49	33	150
14.				1		3	23	68		61
15.						9	12	24	4	28
16.					4	11	8	34	1	22
17.		3				5	71	19	4	114
18.		1			5	2		28	1	366
19.			1		40	1	170	1	36	150
20.					5		29		10	
21.							11		3	
22.					7		78		18	
23.							9		2	
24.										
Total	5	5	7	1	168	94	858	726	707	1266

species in the area make them potentially quite useful indicators of localized environmental change through time. Future research at Upper Shelter may want to focus on this aspect of the record.

In TU#1/2 large bone is dominant in the upper portion of Zone I with shell becoming dominant in excavation level 5. In fact, excavation levels 1 and 2 of TU#1/2 and excavation level 1 of TU#4 contained quite large amounts of large mammal bone assumed to be cattle. Shell is dominant through most of Zone II with large bone becoming dominant again in the bottom of the zone. Excavation level 12 in TU#1/2 contains the mussel preparation feature (Feature 3). In zones III through V, large bone is dominant, however population weights are small in these earlier zones. Smaller mammal bone shows no readily apparent patterning. The six fish bones are too small a sample to offer much information. Bird bone comes only from above the rock fall with three pieces associated with Feature 2 of Zone II.

In TU#4 shell generally dominates above the rock fall with large bone becoming dominant during most of the period represented by the rock fall. In excavation level 14, toward the bottom of the rock fall zone, shell dominates again, followed below by a rough equivalency in large bone and shell. A significant increase in shell occurs again in the bottom two excavation levels, primarily due to Feature 7 containing mussel shell. Smaller mammal bone again shows no apparent patterning; neither do fish and bird bone.

Differing preservation conditions in the two units, within and outside the dripline, hinders making many comparisons. The general alkalinity of the soil may counteract this factor to some degree. In general, the dominance of bone weight for these two units can be correlated with the presence of large triangular projectile points. This correlation also corresponds with the dominance of BTM flake types in TU#1/2.

Worked Bone

Several bone tools and worked bone pieces were also recovered. Five bone awls were found, two with wear striations perpendicular to the bone length. These awls were made on fragments or splinters of bone. These are all expedient awls, not thoroughly modified but, rather minimally modified, or used with no modification. Two awls were discovered in Zone II of TU#1/2 and one in Zone III. One awl was found in each of excavation levels 3 and 4 of TU#4.

One bone tip, recovered from Zone II of TU#1/2, appears to be from a hafted flaker. This tool is a ground and smoothed, lozenge-shaped piece of bone. The working end is blunt and heavily scratched, with one small flake of bone removed. The end opposite the working end appears to be purposefully roughened to enhance purchase for hafting.

A bone scraper is a relatively thin walled (humerous or femur) large mammal long bone fragment. A 5 cm length on the inside edge of the flat break has received a high gloss. This edge is straight to slightly curved.

Other bone containing evidence of modification includes the rounded outer surface of a large mammal bone fragment which is polished and has some perpendicular striations, and a long fragment of large mammal canon (metatorsal) bone with one edge flaked and bearing heavy, closely spaced parallel scratches, particularly in the posterior tendon groove. These scratches may well be due to the cutting out of sinew bundles in this area and thus not purposeful retouch. The large bone fragment was found in Zone II of TU#1/2.

Two bone beads are lateral fragments of thin walled bone. One item is probably of bird bone, and has a glossy surface exhibiting one incision perpendicular to the grain. The other item has perpendicular cutting and polishing on either end and two central perpendicular grooves which almost meet and are slightly out of line. These items are either beads or bead blanks. Both were recovered from Zone II of TU#1/2.

Chapter 4. THE ARCHAEOLOGICAL RECORD AT UPPER SHELTER

Excavation at Upper Shelter in 1985, motivated by recent vandal disturbance, was designed to determine the integrity and contents of the remaining deposits. These data would serve to determine the need for future site protection based on the capability of the site for producing important information relevant to solving regional archaeological problems.

The testing was very limited in scope, as considered appropriate for purely exploratory investigations. Consequently, the potential for sampling error with small populations derived from 1 x 1 meter units should be kept in mind when examining the concluding statements to follow. For instance, differences in proportions of bone and shell may not represent changes in preferential use through time, but rather the differential spatial sampling of localized activity areas or features. This same consideration naturally holds true for any population of artifacts described in this report. Also, if we had employed smaller screen size or flotation of large bulk samples from each level, increased recovery of such items as fish bone may have resulted.

Integrity of Site Deposits

The stratigraphic zones represented in the sheltered part of the site (TU#1/2) are also present outside the dripline (TU#4), but are not as easily distinguished. Some mixing of deposits immediately outside the dripline is demonstrated by the 3250 B.P. date from excavation level 2 of TU#4 and the 1510 B.P. date for level 17 of this same unit. However, both the ash (tephra) and the rock fall zone, quite prominent in deposits under the drip line, are visible in deposits outside the dripline. Both inside and outside the shelter, obsidian occurs exclusively with large Archaic triangular points, biface thinning flakes are more common in the lower levels, and pottery sherds occur at the top. Similar general vertical patterns can also be observed in relative proportions of bone to shell, and frequency of different flake types, though whole flakes are generally larger in size outside the dripline in contemporaneous levels between the two test units. While it seems probable that the area around TU#4 incorporates the toss zone from the sheltered site area, such secondary deposition does not appear to have caused major differences between assemblages from each area. The more important observation is that the relative placement of certain changes in artifacts and sediments occurs higher relative to the main datum in TU#4, outside the dripline, than in TU#1/2, within the sheltered area. This anomaly includes both the rockfall zone as well as the initial occurrence of large Archaic dart points. While some differences do occur, the same general changes are present in the same relative depositional positions in both units.

Test units 3 and 5, located at each end of the sheltered area, serve to simply document the presence of cultural deposits. These deposits contain an organic layer which is thinner and sloped relative to the main culture bearing deposits. Only the upper portion of the deposits were tested in these units. TU#3 cultural materials seem to be correlated with Zone II on the basis of a bent twig figurine. TU#5 deposits could be attributable to either Zone I or II based on the small, isolated sample. An important aspect of the organic cultural layer in TU#5 is that it documents the creation of a horizontal surface by the prehistoric users of the site.

technologies at this site is the result of a hiatus in site use or is real for this local area will rely on future research. The high incidence of broken tools suggests that use of the site was not as a general purpose living area, but rather a site used for specific purposes. It is likely the site was visited by people with complete tool kits, leaving behind only dysfunctional retouched tools, flake tools, and waste. No ground stone was found in this zone; however, seed grinding implements may have been left at the foot of the slope leading to the shelter near the river bank. Wildrye stems are certainly common in the deposit and were used for floors and perhaps superstructures. Features present in this zone indicate that, among other activities, people using the site prepared mussels, reduced cores of locally available chert materials, made bifaces and other tools from this material and manufactured cordage. The lack of obsidian in this and later time periods suggests changes in trade relationships or annual round movements between earlier Archaic and late prehistoric times. At Hogup Cave, Swallow Shelter, Dirty Shame Rockshelter and James Creek Shelter there also was an increased emphasis on the use of local chert materials at periods of time equivalent to zones I and II at Upper Shelter.

The results of the 1959 excavation also indicate intensive use of the South Fork Shelter Site by peoples using Eastgate style projectile points. Four of the eight identifiable points from the 1959 testing of Upper Shelter are Eastgate forms. Heizer et al. (1968: 26-29) mention that an "obvious cultural change" took place at approximately the time of the 30" level at lower South Fork Shelter. A date of 1375 B.P. was extrapolated as a rough date for the bottom of this level. This remarkable guesstimate fits well within the time frame of Zone II of Upper Shelter. Above the 30" level Heizer et al. mention the first appearance of Eastgate points, a decrease in bifacial knives and bone awls, and an increase in shell and chippage. They note as well the disappearance of beaver, muskrat, and elk from the record. Similar changes are noted for Zone II of Upper Shelter. Heizer et al. further speculated that the use of Upper Shelter increased at this time.

Late Occupation (Zone I)

A single radiocarbon date for the middle of Zone I was modern. Though the site was used during the past 1200 years, it was not with the intensity of previous Zone II times. This lighter use of the site is supported by projectile point evidence recovered from the 1959 and 1985 testing phases of both upper and lower shelters. A total of two Cottonwood and two Desert Side-notched point types were recovered from the 1959 testing of both sites. Only one possible Cottonwood point came from Upper Shelter. No Desert series forms were recovered from the 1985 testing, though a Desert Side-notched point was found in the vandal backdirt. Shoshone pottery was recovered from this zone. Extensive burning of Zone I deposits very likely affected preservation of organic materials.

Conclusion

The features, tools, preforms, and debitage discovered in the deposits at this site indicate the occupants performed the following activities: the collection, reduction, and manufacture of tools from local CCS materials; the

collection and preparation of shell fish; and, the collection and preparation of local vegetal materials for use as flooring, structure walls, and cordage. The paucity of basketry and ground stone items suggests that little processing of vegetal food products occurred within the shelter. The testing demonstrated that the dry deposits at Upper Shelter are well stratified and for the most part can easily be excavated by natural stratigraphic levels. The lower deposits below the rock fall zone preserve thin living surfaces, sometimes containing no more than a few pieces of carbon, some bone splinters and a shell fragment or two. These lower deposits thus require much more careful excavation techniques.

Based on the small amount of deposits explored in the 1985 testing, the record at Upper Shelter supports the occupational trends recently identified at nearby James Creek Shelter and places Upper Shelter in the regional framework (Elston and Budy 1987). Upper Shelter data provide the perspective of a site which functioned, at least at times within the past 2000 years, in a more central role in the regional occupation patterns. For the earlier periods of occupation, both Upper Shelter and James Creek Shelter offer the same reflection of highly mobile small groups with very short term visits. Use of the exotic obsidian indicates a larger range of movement during early occupation. Although still a logistical base for small groups toward the end of the James Creek Phase (2850-1300 B.P.), use of James Creek Shelter became more substantial with construction of residential features. Intensity of occupation peaked for this site in the next Maggie Creek Phase (1300-700 B.P.). This increased intensity of site use at James Creek Shelter corresponds to the late Zone II remains at Upper Shelter. In contrast, the nature and diversity of cultural materials, particularly the perishable assemblage, of Upper Shelter during Zone II times suggests that the site witnessed more sustained use by larger group units. In sum, James Creek Shelter was utilized as a seasonal base camp in the logistical hinterland of those peoples who likely focused their adaptations on the major river and stream settings of the upper Humboldt Basin. The South Fork Shelter Site was likely located nearer substantial habitation sites, thus witnessing more frequent utilization potentially by groups of more varied composition.

These same temporal trends are also reflected regionally in the surface archaeological record. An extensive 11,000 acre survey extending from near the mouth of South Fork westward to north of Carlin, Nevada, near James Creek Shelter, also provides supportive evidence for increased use of regional resources during the time marked by the use of Elko series and Rose Spring and Eastgate projectile points (Armentrout and Hanes 1987).

Obviously, the very limited testing of Upper Shelter has revealed a rich archaeological record of at least the past 7000 years. This record can serve in the future to test models of regional prehistoric occupation now in the making.

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