ARCHAEOLOGICAL INVESTIGATIONS AT EUREKA RIDGE (5TL3296),
TELLER COUNTY, COLORADO

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ABSTRACT

The Eureka Ridge site (5TL3296) is a large, single component Western Dismal River Aspect/proto-Apachean site, consisting of features and flaked lithic, ceramic and ground stone artifacts. The site is situated on the crest of a ridge overlooking an intermittent drainage at an elevation of 8880 ft. in the upper montane environmental zone. In addition to small side-notched and un-notched projectile points and a bi-pointed beveled biface, the collection of diagnostic artifacts includes over 450 plain-ware, simple-stamped, and cord-impressed sherds representing 7-10 vessels, the majority manufactured from locally available materials. Three direct AMS dates of 460 ± 40 BP (2-sigma calibrated age range of A.D. 1410 - 1480), 410 ± 30 BP (2 Sigma Cal AD 1430-1510), and 305 ± 30 BP (2-sigma calibrated age range of A.D. 1490 – 1650) obtained from crushed body sherds document at least two occupations of the site. These dates place occupation of the Eureka Ridge site firmly within an emergent pattern of sites in the Front Range that supports a 15th century (or earlier) date for Athapaskan migration into eastern Colorado. In addition, obsidian sourced to the Jemez Mountains suggests either contact with Rio Grande Pueblo groups or actual Athapaskan presence in New Mexico by the early 15th century. Extensive testing resulted in the discovery of three features, two possible hearths and a post-mold configuration that most likely represents either a small hide lodge or wickiup. This cultural material represents the best documented component from the late Pre-contact period in eastern Colorado, and contributes significant new information regarding this little-known period of time.
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Introduction and Site History

Following the catastrophic Hayman wildfire in 2002, the USDA Forest Service, Pike and San Isabel National Forests, contracted with RMC Consultants, Inc. (RMC) to perform a 100% cultural resource inventory survey (Class III) of select areas proposed for salvage timber sales (Figure 1). Eureka Ridge was discovered on July 12, 2003. The site’s size and complexity necessitated two and a half days of work to adequately document the surface artifacts and create a provisional site map (Figure 2). Initial assessment of the site indicated that it was located on a geologically stable surface with extremely shallow sediments (Larmore et al. 2003). Although the site’s surface assemblage was significant enough to merit consideration for listing to the NRHP, it remained to be determined whether intact buried deposits were present to provide additional information given the shallow nature of the surface sediments.

Preliminary analysis of the ceramic artifacts indicated that the site was probably related to the Western Dismal River Aspect as defined by Brunswig (1995). A cursory examination of the ceramic artifacts by both Drs. Bob Brunswig and Ray Wood confirmed this initial assessment. However, considering the limited understanding of the relationship between ceramic types and historic Native American groups, a definitive determination of cultural affiliation could not be made at that time.

Limited testing to determine the nature of the subsurface deposits took place on August 11, 2003. Two 1 x 2 m test units were placed over two artifact concentrations (AC) identified during initial field documentation (AC-1 and AC-4, see Figure 1). These excavations served to confirm the previously suspected presence of extremely shallow soil development on a geologically stable surface. Cultural material was found to be limited to the upper 5 cm of deposits. However, artifact density within this 5 cm was high; 124 ceramic sherds were recovered from the 1 x 2 m test unit placed over Artifact Concentration 4. A concentration of fire-cracked rock was located in Test Unit 2 (Feature 1) indicating that additional features might be present, albeit excavated into the C soil horizon. Results of these limited test excavations indicated that additional buried cultural material could be present on the site and that potential post-fire erosional processes could adversely affect these deposits.
Figure 1. Location of the Hayman burn area in Jefferson, Douglas, Teller and Park Counties, central Colorado.

Figure 2. Site map for the Eureka Ridge site (5TL3296) in Teller County, Colorado.
Based upon the limited test excavations conducted in August 2003, a site assessment grant was submitted and awarded by Colorado’s State Historic Fund (SHF grant #2004-AS-010) to the Colorado Archaeological Society, Pikes Peak Chapter, which contracted with RMC Consultants, Inc to administer the grant. Extensive test excavations took place between April 19-22 and April 27-28, 2004 under the direction of RMC Consultants staff, assisted by Frank Escobedo, Richard Garcia and Roland Lummis, volunteers from the Pikes Peak Chapter. RMC Consultants excavation crew consisted of Sean Larmore, Kevin Gilmore, David Killam, Brian Naze, Heather Mrzlack, Wade Broadhead, and Kim Fariello. An additional 11.5 m² were excavated during this timeframe.

Statement of Objectives

Objectives for assessing Eureka Ridge (5TL3296) are based primarily upon evaluating the site for listing on the National Register of Historic Places (NRHP). This consisted of A) evaluating the site for the presence of intact subsurface cultural deposits and determining the nature and extent of those deposits; and B) evaluating the temporal and cultural affiliation of the site.

The second assessment objective was to evaluate the site for potential effects of post-fire erosional processes. The severity of this second assessment objective was largely dependent on the results of whether significant subsurface cultural deposits are present.

Evaluation of the first objective consisted of test excavations placed in areas of high surface artifact density. Surface integrity and stability was evaluated through periodic site visits in order to determine if active erosion was taking place. Measurement of surface integrity consisted of the identification of rill development and sheetwash.

Report Organization

Presented below are the results of both stages of test excavations. The results are discussed within the wider culture history of the Dismal River Aspect. After a brief introduction to the environment of the site area, an introduction to Apachean prehistory with a particular emphasis placed on Dismal River Aspects on the Central Plains and similar manifestations in Colorado and current data gaps in both regions. It is intended to put the excavation results from the Eureka Ridge site within a larger cultural context. Following the excavation results, the material culture recovered from the surface and during test excavation is presented. Again, some interpretation is embedded in the results. Finally, based upon the results of excavation and artifact analysis, Eureka Ridge is discussed in relation to the larger culture history of early Athapaskans and their migration to the Southwest. Appendices in the back of the report include results of the obsidian X-ray fluorescence (XRF), Beta-Analytic radiocarbon assays, and a field specimen tally of recovered artifacts by provenience.

Environment

Eureka Ridge is located within the Front Range Uplift of the Southern Rocky Mountains. Regionally, the site is located between the Plains physiographic province to the east and the intermountain South Park to the west (Figure 1). Elevation of the site is 8880 ft
above sea level (asl). Vegetation and elevation classify the site and surrounding area as upper montane. Topographically, the area is characterized by broken, upland landforms, dissected by numerous intermittent drainages and larger order streams that feed the South Platte River. Dominant vegetation is ponderosa pine followed by large stands of aspen found predominantly within riparian areas. Average rainfall is 20-25 cm within the montane zone.

Geologically, the area is underlain entirely by Precambrian rocks, including granites associated with the Pikes Peak batholith, biotite gneiss, schist, and quartzite. Named units include Pikes Peak, Mount Rosa, Windy Point, and Redskin granites. Within the area, pre-Bull Lake gravels, Fountain Formation sandstone, and Manitou limestone are found (Tweto 1979). Soils derived from the residual weathering of Precambrian granite cover the site. Sphinx soils are shallow, excessively drained and consist of a gravelly coarse sandy loam. Sphinx soils are found on mountainsides and ridges, ranging from 5 to 40 percent, and generally support ponderosa pine, Douglas fir, aspen, kinnikinnick, juniper, and various grasses and forbs (Moore 1993).

This portion of the document has been modified from the original and information that could reveal the location of the site has been redacted at the request of the OAHP. Places where the information has been changed from the original version are in bold. Specifically, the site is situated on top of a narrow ridge near the headwaters of Turkey Creek. Width of the ridge varies between 30 and 40 m north to south; cultural material extends over 250 m of the ridge east to west. To the north of the site is an open meadow and riparian area. The south slope of Eureka Ridge is dissected by several gullies separated by steeply sloping finger ridges. Cultural material extends from a level high point located on the east end of the ridge (Figure 2), and continues down the crest to another level area before continuing down a second backslope. Cultural material ends on the toeslope above a saddle. On-site vegetation is now limited to burned ponderosa pine and aspen. The area is completely devoid of near surface vegetation and duff allowing 100% ground visibility except in a small area of the site where the duff was not completely burned off. Rye grass is also present, but was introduced to the site area in 2002 in an attempt to prevent erosion. Economic species available on site or in the wet meadow directly below the site to the north include nodding onion (Allium sp.), salsify (Tragopogon porrifidius) and sego lily (Calochortus sp.), all of which produce starchy roots that can be eaten either raw or cooked (Harrington 1976).

Overview of Apachean Prehistory

There is no dispute with the contention that at some point in the past Athapaskan speakers migrated to the Southwest (Wilcox 1981: 1988). There is abundant data that supports this contention, primarily the linguistic similarities between Southwest Apachean speakers and Athapaskan speakers from west-central Canada (Hoijer 1956). However, precisely when this migration took place continues to be debated (e.g., Schlesier 1994). At least two or three large-scale, generalized Athapaskan migrations are thought to have taken place after A.D. 500 (Schlesier 1994; Wilcox 1988). The degree of linguistic separation between eastern and western Athapaskan groups and the relative differences between these two southern Athapaskan groups are used to support multiple
migrations (Hoijer 1956). The prehistoric inhabitants of Canada must have spoken a proto-Athapaskan language prior to emigration. Determination of possible migration routes has been complicated by the fact that there is no recognition of any unequivocal pre-16th century manifestations of Athapaskans in the archaeological record north of the Southwest, and in fact there is little agreement among archaeologists as to what the archaeological manifestation of these people might look like.

There is little archaeological evidence for the presence of culturally undifferentiated Athapaskans in the Southwest. The earliest evidence of Athapaskans in the Southwest comes from north-central New Mexico. Early dendrochronological dates on Navajo forked stick hogan in the Gobernador area suggest that Athapaskans were present in the area by the late 15th century (Hall 1944:100; 1951). However, the lack of cutting dates on these structures calls the accuracy of this early date into question (Wilcox 1981). The earliest well dated forked stick hogan with associated Dinéh Gray ceramics and other material culture typical of the Navajo come from a half dozen sites dated to the period A.D. 1541 to 1679 in the Dinéh area of northern New Mexico (Hancock 1997; Towner 1997). These sites are thought to represent Navajo occupation versus a generalized Athapaskan pattern based on both diagnostic material culture and formal site structure (Wilshusen and Towner 1999:363), which suggests that Athapaskans had been in the area long enough for recognizable cultural patterns specific to the Navajo and Apache to have developed out of the presumed generalized Athapaskan cultural pattern of the first immigrants. Based on this data, an argument can be made for the arrival of Athapaskans with a more generalized cultural pattern in the area as early as the 15th and possibly the 14th century.

Three routes have been proposed that have bearing on the archaeological record in Colorado and northern New Mexico. The first is proposed to have passed through the intermontane parks west of the Continental Divide from southwestern Wyoming circa A.D. 1350 (Opler 1983); the second along the eastern Front Range of the Rocky Mountains from southeastern Wyoming (represented archaeologically by the Beehive and Benson’s Butte complexes) circa A.D. 1600; and a third through the Plains away from the mountain front, post A.D. 1600 (Schlesier 1994; Wilcox 1988). An even earlier migration is suggested beginning circa A.D. 950 that entailed crossing the Southern Rocky Mountains from southwest Wyoming to the Park Plateau region of north-central New Mexico and southeastern Colorado (Schlesier 1994). This last route has bearing on the Southern Athapaskan manifestation as discussed by Brunswig (1995) and Zier and Kalasz (1999) for Colorado.

Any discussion of possible archaeological antecedents of the Apache and the migration of the southern Athapaskans requires consideration of the ethnic affiliation of the Avonlea Complex of the northern Plains (Kehoe 1966; 1973). The Avonlea Complex dates to A.D. 100 – 1000 on the northern Plains of the U.S. and Canada (Morlan 1988), and has been interpreted by some archaeologists as the archaeological manifestation of prehistoric Athapaskans (Davis 1988). The appearance of small, well-made side-notched points of the Avonlea Complex in the archaeological record of the northern Plains ca. A.D. 100 have been interpreted as heralding the arrival of the bow and arrow into the area from the north. Because the arrival of this new technology suggested migration of people, and archaeological data indicates increasingly more recent dates of Avonlea complex
projectile points from north to south (Schlesier 1994), Avonlea has been seen as a plausible candidate for the archaeological representation of Athapaskan migration.

One of the most southerly occurrences of projectile points morphologically similar to those of the Avonlea Complex is at the Bayou Gulch site in central Colorado (Gilmore 1991a), where these points occur in stratigraphic contexts with 2-sigma calibrated dates that range from A.D. 1260 to 1500 (Gilmore 2003). Both Brunswig (1995) and Gilmore (2003) discuss a scenario in which a population decrease in eastern Colorado and along the Foothills opens the region to Athapaskan migration due in large part to the onset of the Pacific paleoclimatic episode (A.D. 1200 – 1450). Increasing desiccation of the Central Plains would have forced bison to migrate south, followed, in theory, by nomadic Athapaskan hunters. However, differences in lithic technology between the Avonlea complex and prehistoric sites in the Athabaskan heartland in northern Canada and central Alaska suggest that there may not be any continuity between these cultures (Reeves 2003; Walde 2003). If the Avonlea complex is not associated with prehistoric Athapaskans, then evidence of a pre-15th century presence of Athapaskans in the Colorado is still either absent or unidentified.

The Dismal River Aspect of the Central Plains, named for a river in Nebraska, was first distinguished by distinctive pottery associated with these sites, a type eventually designated as Lovitt Plain (Strong 1935). These early sites in Nebraska and Kansas were dated using dendrochronology (Table 1). Lovitt Plain was first recovered at the Signal Butte site in southwestern Nebraska, but was found in mixed stratigraphic contexts with Upper Republican pottery (Strong 1935). It was not until excavations at Ash Hollow Cave that clear stratigraphic separation established Dismal River as a cultural manifestation more recent than Upper Republican (Champe 1946). Excavation at the Lovitt site (25CH1) led to the establishment of this site as the type site for the Dismal River Aspect (Hill and Metcalf 1941). Three different types were identified during excavation at the Lovitt Site: Lovitt Plain (burnished, shiny exterior); Lovitt Simple Stamped (tooling marks); and Lovitt Mica Tempered, which occurred as a very small percentage of the total assemblage.

Together with the Lovitt site, investigations at White Cat Village (25HN37), also located in southwestern Nebraska, provide the basis for all subsequent Dismal River Aspect comparisons. Although first reported in 1949 by Champe, it was James Gunnerson who compiled the most detailed report of this work (1960). One of the most significant conclusions from the work at White Cat was the determination of a “typical” architectural style for the Dismal River Aspect. The five-post pattern of central support posts seen in many, but not all, of the structures at White Cat Village has become the pattern considered diagnostic of Dismal River habitation structures despite their documented occurrence at only two sites (Lovitt and White Cat). The problem of designating a “typical” house type based on their documented presence at only two sites is discussed in detail in Gulley (2000). Only White Cat Village exhibited any consistency with the five-post pattern, and even then one house pit contained six post impressions.
Table 1. Dendrochronology dates for the Eastern Dismal River Aspect.

<table>
<thead>
<tr>
<th>Site</th>
<th>Site Name</th>
<th>Date</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>25CH1</td>
<td>Lovitt</td>
<td>AD 1706</td>
<td>Gunnerson 1960</td>
</tr>
<tr>
<td>25DN1</td>
<td>Nichols</td>
<td>AD 1709</td>
<td>Gunnerson 1960</td>
</tr>
<tr>
<td>25HN37</td>
<td>White Cat Village</td>
<td>AD 1723</td>
<td>Gunnerson 1960</td>
</tr>
<tr>
<td>25GD2</td>
<td>Ash Hollow Cave</td>
<td>AD 1587-1704</td>
<td>Champe 1949</td>
</tr>
</tbody>
</table>

Gunnerson’s compilation of White Cat Village and regional summary in his 1960 work *An Introduction to Plains Apache Archaeology – The Dismal River Aspect* remained, until recently, the authoritative text on the subject. The enduring legacy of the monograph is the assertion, based on Spanish documents, that Dismal River is the archaeological expression of the historically documented Plains Apache (Champe 1949; Gunnerson and Gunnerson 1971; D. Gunnerson 1974). A detailed critique of this interpretation is not possible here, but Gulley’s (2000) recent summary provides a thoughtful discussion that questions the validity of that assertion. Gulley suggests, along with others, that the Dismal River Aspect represents a generalized Plains life way that involves a complex fusion of technology originating from many groups. The archaeological manifestation of this interplay between both nomadic and semi-sedentary groups is the melding of ceramic stylistic traits, including surface treatment, rim form, and choice of temper. Even Gunnerson recognized technological cross-over between groups. Simple stamping was attributed to the Caddoan speaking Lower Loup Focus (protohistoric Pawnee) and the Great Bend Aspect (protohistoric Wichita); absence of handles on vessels was attributed to the Wichita; micaceous paste and temper correspond with Pecos and Jemez Pueblos in the Rio Grande valley; and vessel shape was found to be similar to Taos and Navajo wares (1960:240; 1968). Similarities between Shoshonean ceramics (Intermountain Ware) and Dismal River wares have also been noted by some (Brunswig 1995:191).

Early discussions dated the Dismal River Aspect (e.g., Gunnerson 1960) to circa A.D. 1700 based both on tree ring dates and the presence of European trade goods. More recently, the hypothesized initial occurrence of the Dismal River Aspect on the Central Plains has been extended back to A.D. 1525; ceramic use is believed to range between ca. A.D. 1600/1625 – 1725 (Schlesier 1994; Brunswig 1995). Brunswig seems to have presaged this most recent data by stating that “there is very limited and largely circumstantial evidence” of Dismal River presence in eastern Colorado occurring between A.D. 1300 – 1550 (1995:175). This statement was based on the “largely circumstantial” association of proto-Apachean people with sites dated A.D. 1490 – 1515 at Carrizo Ranch in southeastern Colorado. These sites contained stone rings, small side and un-notched triangular projectile points, and Pueblo IV trade pottery. Presumably, limited evidence for Avonlea assemblages in southeastern Wyoming (Frison 1991; Reher 1971) and Colorado (e.g., Gilmore 1991a; 2003) led Schlesier (1994) to posit an Apachean presence by circa A.D. 1600. These nebulous archaeological manifestations were attributed to proto-Apacheans for lack of a better alternative.

Recently, Brunswig (1995) has divided the Dismal River Aspect into eastern and western manifestations (leaving aside for a moment its southern component), and this distinction will form the basis for the following discussion. In the following overview, particular emphasis is placed on Dismal River manifestations in Colorado. The lack of recent data
from Dismal River sites in Nebraska and Kansas and the context of the original excavation of sites such as the Lovitt site, White Cat Village, and Ash Hollow Cave, as well as possible problems associated with the dating of these sites (see Gulley 2000), force the following interpretation to be weighted more towards recent data gathered from Colorado. Further, if one accepts the A.D. 1625-1725 range for the Dismal River occupation on the Central Plains, chronometric dating of Eureka Ridge and other sites along Colorado’s Front Range suggest that Dismal River Aspect sites in this area predate the Central Plains sites by as much as two-hundred-fifty years, which makes clear-cut comparisons between the two areas problematic.

The Western Dismal River Aspect is confined to extreme southeastern Wyoming and Colorado, extending to the New Mexico border. It differs from the eastern Dismal River by the almost exclusive presence of Lovitt Plain ware and a lack of architecture. As will be discussed in greater detail below, the utility of dividing the Dismal River Aspect into geographic variants seems to be generating increased merit in light of recent discoveries along Colorado’s Front Range that evidence a growing chronological gap between the two. The distinction may have less to do with any clarification of ceramic types than it does with chronometric dating (Larmore et al. 2003; Ellwood personal communication 2003; Tucker et al. 2003; Kindig 2000) and a recent critique of its validity as an ethnic marker (Gulley 2000). Purported southern Athapaskan manifestations are in part defined by the presence of Sangre de Cristo Micaceous (Baugh and Eddy 1987; Gulley 2000), which encompasses a number of different micaceous sub-types, including Ocate Micaceous that occurs in southern Colorado and northeast New Mexico (Brunswig 1995). Micaceous ceramics from southern Colorado are at present undated, but prevalent based on surface survey (Hummer 1989; Zier and Kalasz 1999; Brunswig 1995). Ocate Micaceous most likely dates post A.D. 1700 and is technologically related to Pueblo micaceous ware of northern New Mexico indicating increasing contact between Athapaskan and Puebloan groups.

Only very recently have a number of sites been investigated in Colorado that have produced Dismal River ceramics in any quantity and have been dated with any certainty. Previous research conducted within Colorado began with Gunnerson (1960), but was limited to the identification of sherds in museum collections recovered from the surface of sites that were inadequately documented and from which few sherds were recovered. To further complicate matters, these sites were often multi-component, some with ceramics representing several cultures and time periods. Following Gunnerson, Brunswig’s (1995) summary of Apachean ceramics was useful but did not involve comparison at the site level. There is also the unexplained 35-year gap wherein few sites were discovered and discussed and no synthesis was undertaken for the Dismal River Aspect in Colorado. The primary value of Brunswig’s work was his assertion that the Dismal River Aspect be divided into Eastern and Western variants, with a southern Dismal River variant (based on the presence of Ocate Micaceous ceramics) thought to represent the protohistoric Apache of the late 16th and 17th centuries.

The Western Dismal River Aspect is represented by a number of sites that have recently been investigated that appreciably expands our knowledge of its occurrence in Colorado. These include the Devil’s Thumb Trail site (5BL6904) located at an elevation of 11,290 ft (3440 m) in the Indian Peaks region of the Southern Rocky Mountains, approximately
110 km northwest of Eureka Ridge (Kindig 2000); the Lawn Lake site (5LR318) located at an elevation of 10,995 ft (3352 m) in Rocky Mountain National Park, approximately 150 km northwest of Eureka Ridge (Brunswig 2001); the Pinnacle site (5PA1764) located at an elevation of 8600 ft (2621 m) approximately 25 km southwest of Eureka Ridge (Tucker et al. 2003); and site 5EP3496, which consists of a whole vessel recovered on a slope of Pikes Peak at an elevation of 9400 ft, approximately 35 km southeast of Eureka Ridge. The context of these sites is considered significant. All are situated in the high country between 8600 and 11,300 ft and are in relatively isolated areas of low site density and what is perceived to be limited resources. In addition, radiocarbon dates obtained for these sites indicate they were all occupied in the 15th century, which suggests an earlier arrival and occupation of the region than generally ascribed for the Eastern Dismal River Aspect. To this list of recently documented Western Dismal River sites in the mountains of Colorado we have added two other dated sites with Dismal River ceramics. The Franktown Cave site (5DA272), at an elevation 6390 ft in the Palmer Divide area at the foot of the Front Range south of Denver contains two dated components that may represent proto Apache occupation (Gilmore 2005), and the Petsch Springs site (48LA303) from the Pine Bluffs area in southeastern Wyoming (Reher 1971). This site is situated on the Plains at the eastern boundary of the Western Dismal River geographic area, but the date from this site suggests it belongs in the western pattern (Table 2, below).

<table>
<thead>
<tr>
<th>Site</th>
<th>Site Name</th>
<th>Lab #</th>
<th>Dating Method</th>
<th>Radiocarbon Age &amp; 2-sigma age range*</th>
<th>Reference</th>
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<tr>
<td>5BL6904</td>
<td>Devil’s Thumb</td>
<td>AA-22853</td>
<td>$^{14}$C</td>
<td>350 ± 50 BP (AD 1450-1640)</td>
<td>Kindig 2000</td>
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<td>5LR318</td>
<td>Lawn Lake</td>
<td>Beta 144870</td>
<td>AMS Carbon residue</td>
<td>540 ± 50 BP (AD 1300-1445)</td>
<td>Brunswig 2001</td>
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<tr>
<td>5PA1764</td>
<td>Pinnacle</td>
<td>Beta 172328</td>
<td>AMS</td>
<td>470 ± 60 BP (AD 1310-1630)</td>
<td>Tucker et al. 2003</td>
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<td>-</td>
<td>TL on soil Blue OSL</td>
<td>AD 1354-1496</td>
<td>Tucker et al. 2003</td>
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<tr>
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<td>-</td>
<td>TL on soil IRSL</td>
<td>AD 1134-1226 *date rejected</td>
<td>Tucker et al. 2003</td>
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<td>5TL3296</td>
<td>Eureka Ridge</td>
<td>Beta 187965</td>
<td>AMS Crushed sherd</td>
<td>410 ± 30 BP (AD 1430-1620)</td>
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<td>Beta 187966</td>
<td>AMS Crushed sherd</td>
<td>460 ± 40 (AD 1400-1615)</td>
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<td>5DA272</td>
<td>Franktown Cave</td>
<td>AA-60690</td>
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<td>643 ± 48 (AD 1280-1400)</td>
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<td>5DA272</td>
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<td>AA-60694</td>
<td>AMS corn</td>
<td>380 ± 34 (AD 1440-1630)</td>
<td>Gilmore 2005</td>
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<tr>
<td>5DA272</td>
<td>Franktown Cave</td>
<td>AA-60695</td>
<td>AMS corn</td>
<td>293 ± 36 (AD 1485-1660)</td>
<td>Gilmore 2005</td>
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<td>48LA303</td>
<td>Petsch Springs</td>
<td>Beta 28869</td>
<td>$^{14}$C Soil date</td>
<td>420 ± 220 (AD 1240-1954)</td>
<td>Reher 1971</td>
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<td>48LA303</td>
<td>Petsch Springs</td>
<td>Beta 28870</td>
<td>$^{14}$C Soil date</td>
<td>380 ± 80 (AD 1410-1660)</td>
<td>Reher 1971</td>
</tr>
</tbody>
</table>

*All $^{14}$C dates calibrated using CALIB version 5.0 (Stuiver and Reimer 1993) using the Intcal05 data set (Reimer et al. 2004)
EXCAVATION RESULTS

Methods

Test units were excavated in arbitrary 5 cm levels, which, given the shallow deposits on the site, were generally limited to one level of excavation per test unit. Excavation of levels followed topography. All excavated material was screened through 1/8” mesh. Test units were mapped horizontally using a rod and transit placed over a permanent rebar datum. Vertical provenience was controlled by a subdatum established at each test unit, generally the highest corner of the unit. Beginning and ending depths for test units and vertical point provenience of artifacts were hand pulled with string and tape measure from unit subdatums. Excavation methods entailed the use of shovel and trowel.

The selection of test units for excavation was based on the distribution of surface artifacts. Artifact concentrations (AC) identified during site mapping and documentation provided proxy indicators for the presence of significant subsurface cultural deposits. Test units varied in size between 1 x 1 m and 2 x 1 m units and were oriented true north on the ground surface. Productive test units were often expanded and in essence became block excavations as in Block 1.

Results

A total of 15 test units (TU) were excavated during all phases of work at the Eureka Ridge site (Figure 3). Two of these units were 1 x 2 m test units (Test Units 1 and 2), ten were 1 x 1 m (Test Units 3 – 12), and three were 0.5 x 0.5 m (Test Units 13-15).

The first of these (TU-1 and TU-2) were excavated in August 2003 to provide baseline data on the nature of subsurface deposits at Eureka Ridge. Test Unit 1 was placed over Artifact Concentration (AC) 4, a concentration of ceramic material. An abundance of ceramic artifacts were recovered from the subsurface. No post-molds were recognized, but the nature of the A soil horizon, partially burned during the Hayman fire, made recognition difficult. Certainly the density of ceramic artifacts in the test unit suggests the possibility that a structure similar to Feature 2 may have been present. A total of 120 ceramic sherds were recovered, including an additional five rim sherds. Interestingly, no debitage was recovered during excavation of these units. An exploratory shovel scrape was conducted during the most recent investigations indicating that the density of artifacts drops sharply to the north of TU-1. Future investigations would be productive in the area of AC-4.

Test Unit 2 was placed over AC-1, a concentration of ceramic and lithic material. It was hypothesized that this level area would be a likely location for subsurface features. Excavation of this 2 x 1 m unit exposed Feature 1 (described below), an amorphous concentration of fire-cracked granite rock. No other associated features were discovered. Most significant was the recovery of a partially buried bi-pointed biface (FS 75) in the eastern 1 x 1 of the unit. This artifact is discussed in greater detail under Lithic Technology. A total of 34 ceramic body sherds were recovered from the subsurface. None of these added substantively to the interpretation of the surface assemblage of
ceramic artifacts already collected. Debitage was recovered from this unit indicating that multiple activities took place at this locality.

![Diagram of Eureka Ridge Site, 5TL3296 Distribution of Test Units]

Figure 3. Location of test and excavation units excavated at Eureka Ridge.

Test Unit 4’s location was chosen for its level topography and proximity to a mano (alluvial cobble, FS 536) and metate fragment (FS 537). A 1 x 1 m unit was excavated one level (5 cm) before it was terminated due to a lack of artifacts (1 quartz crystal flake, FS 507) and no discernible features. This unit was entirely exploratory in nature and was not pursued given the abundance of potential locations for additional test units.

The remaining test units are discussed below under Features. Test Unit 6 is discussed under Feature 3 and Test Units 3, 5, and 7-15 were combined as Excavation Unit (EU) 1 and discussed under Feature 2.

**Stratigraphy**

Soil profiles among the test units did not vary, consisting entirely of a thin 3-5 cm A soil horizon overlying a C soil horizon best characterized as a grus and described as a gravelly sandy loam derived from the *in situ* weathering of the granite bedrock. With increasing depth, the sediment resembles a saprolite (Cr soil horizon) (Birkeland 1984; Madole personal communication 2004). Values in the upper 1-3 cm of the A horizon are much darker due to the influx of charcoal and ash from the consumption of the duff layer and subsurface organics during the fire. The A soil horizon extends for approximately
another one or two cm below the burned horizon to a relatively abrupt transition to the C horizon. On the crest of the ridge in saddle and crest areas where the slope varies from 0-5 degrees the A horizon is five to six cm thick, whereas on the shoulders of the ridge and other area of the site greater than five degrees of slope the A horizon is only about 3 cm thick.

**Feature Descriptions**

*Feature 1 (Test Unit 2)*

Excavation of Test Unit 2, West ½, exposed a roughly circular configuration of fire-cracked granitic rock immediately below the gravel surface (Figures 4 and 5). The configuration measures approximately 40 cm diameter with angular rock measuring between 3 x 3 cm to 7 x 7 cm and extending 5 cm below the ground surface. No discernible staining was noted. The feature was bisected, but the profile did not contain stratigraphy suggestive of an *in situ* feature. Feature 1 most likely represents the remains of a hearth clean-out or the remains of bone processing similar to Feature 3.
Feature 2 (Excavation Unit 1)

Feature 2 consists of an elliptical alignment of 16 shallow post molds and two possible post molds found in Excavation Unit 1 (Figure 6). The post molds were assigned sub-feature numbers 2.1 – 2.14. The shallow post molds are relatively uniform in size (9-12 cm diameter) and evident in the surface of the C soil horizon once the darker sediments of the overlying A soil horizon are removed (Figure 7). The depth that these post molds penetrate into the C soil horizon varies between 2 and 5 cm, and several of them were almost completely obliterated by the excavation of Level 1 to a depth of 5 cm below ground surface (2-3 cm below the contact between the A and C soil horizons). The post molds were filled with matrix that was slightly darker and grayer in color than the surrounding C soil horizon. The matrix of most of the post molds contained sparse flecks of charcoal, but not enough to suggest that the posts burned in place. However, the matrix of post mold 2.1 was deeper and contained more charcoal than any of the other sub-features (Figure 8). The Feature 2 post molds are interpreted as the shallow depressions that held the ends of poles for a small tepee or wickiup that was slightly oval in outline with internal dimensions of approximately 2.3 x 2.0 m, with a hypothesized entrance on the east-southeast side between subfeatures 2.1 and 2.2. This hypothesized entrance is identified by a slight depression in the C soil horizon and a thickening of the A soil horizon, suggesting slight erosion due to foot traffic. There are no indications that the structure contained an internal hearth, which is not unusual for structures of this type (Frison 1983; Scott 1988), and may be an indicator of seasonality (e.g., Cater 2003).
The size of Feature 2 is consistent with the range established for free standing wickiups (1-6 m diameter) by Scott (1988:45), falls within the smaller end of the size range of stone circles on the southern Plains (Mobley 1983), and falls just short of the lowest size range of stone tepee rings observed on the northern Plains (Kehoe 1960:443; Morris et al. 1983). Kehoe suggests that pre-contact tepees (and therefore the stone circles that remain to define them) were smaller (6-8 buffalo hides) than the later horse era tepee (6-20 hides), due to (among other factors) the relative burden carrying capabilities of dogs versus horses (Kehoe 1960:462). There is some statistical support for the hypothesis that both the range and median size of stone rings increases through time in some places (Mobley 1983; Wilson 1983), but the relationship between age and size apparently does not hold true in all geographic areas (Wilson 1983). Scott (1988:47) mentions that wickiups were used by several ethnic groups (including the Apache) throughout the intermontane west. The historic Chiricahua Apache of southern Arizona and northern Mexico used bent pole and brush wickiups (Opler 1941: Plate 1), as did the Western Apache on the San Carlos reservation of eastern Arizona (Basso 1983:474). Historically, the Mescalero Apache of southeastern New Mexico and west Texas used both wickiups and hide tepees in the same camp, although in the pre-reservation period tepees were used on the plains while wickiups were used “in high, rugged country” (Opler 1983:434-435, Figures 10 and 11). The Lipan Apache of central and south Texas also used tepees on the plains and bent pole wickiups with bough and /or hide covers in the “high, wooded country” (Opler 2001:948). The remains of circular structures defined by stone circles or brush and burned clay attributed to the post-contact period Apache in northern New Mexico range between 12-18 ft (3.5-5.5 m) in diameter (Gunnerson 1979). Prior to the reservation period, the Navaho constructed conical forked stick hogans that were similar in size to the wickiups constructed by the linguistically related Apache groups (Brugge 1983:494, Figure 5). Obviously, relatively small pole and brush structures have a wide geographic and ethnic distribution among southern Athapaskan groups. However, we believe that the use of wickiups in the mountains and tepees on the plains by both Athapaskan and Numic groups may represent the adoption of the traditional dwellings (Numic wickiups and Athapaskan tepees) of each group by the other for use in different environments, and prior to contact between these groups the Numa were using wickiups and Athapaskans were using tepees exclusively.

Most of the documented wickiups in Colorado occur west of the Continental Divide. In his 1988 overview of conical timbered structures in Colorado, Scott noted that out of 234 individual structures at 61 sites then recorded in Colorado, only one such structure was located east of the Continental Divide (Scott 1988:48). As of the late 1990s this number had increased to 430 recorded structures at 132 sites (Sanfillippo 1998). A recent search of the Office of Archaeology and Historic Preservation Compass database identified 29 additional (albeit possible) structures at 16 sites recorded east of the Continental Divide, one in Jackson County and the rest in Larimer County. All of the Larimer County sites are in Rocky Mountain National Park (Butler 2004). Data available from some of these structures compared to information gathered from native informants suggests it is likely that some unknown proportion of the structures in RMNP can be attributed to historic and modern Anglo visitors to the Park, and are not of aboriginal construction (Butler 2004:26). Given the large numbers of visitors over the years, this conclusion seems warranted.
Figure 6. Map of Excavation Unit 1 showing the location of Features 2, 4, and 5.
Figure 7. Photograph of Feature 2, looking north. Flagging tape marks post molds.

Figure 8. Post mold 2.1, looking west. The sub-feature has been bisected to show the depth and nature of the fill. Post mold 2.1 was the largest diameter and deepest of the post molds associated with Feature 2.
Although the size of Feature 2 is more consistent with a wickiup or conical timber lodge, we favor the interpretation of a hide lodge or other portable structure based on several lines of evidence. As opposed to wickiups, which were usually constructed of many poles of differing sizes and left in place on site, hide tepees were constructed of poles of uniform size that were distributed evenly around the circumference of the structure that were subsequently removed by the inhabitants and taken along when the site was abandoned. Although there is good ethnographic evidence for a highlands/wickiup-plains/tepee dichotomy of use, there is evidence that structures with evenly spaced poles and covered with hides were used in the Bighorn Mountains of Wyoming (Frison 1983:86). As is Feature 2, tepees are typically not round structures, but are often elliptical in shape (Davis 1983:72). With the long dimension oriented to wind direction, the structure is more stable. The location of Subfeature 2.6 adjacent to 2.7 (Figure 6) could also represent a post for a smoke flap, a characteristic seen in tepees but not wickiups.

![Figure 9. Close-up of an excavated post mold in Feature 2 (subfeature 2.8) with large rim sherd and smaller body sherd in situ.](image)

Additional evidence supporting Feature 2 as a hide tepee comes from the context of recovered artifacts. Twenty of the twenty-six sherds point-plotted in the concentration of sherds on the west and southwest sides of Feature 2 were recovered below the A soil horizon from post molds that penetrated the culturally sterile C soil horizon. Six post molds (2.3, 2.5-2.8, and 2.10) contained potsherds associated with the AC-3 vessel, and these are the best preserved of all the sherds recovered. The sherds collected from the
surface in AC-3, and from within the top 3 cm of sediment in EU-1 outside of the post molds, all exhibit weathering of both their exterior and (to a greater degree) their interior surfaces. This is evidenced by the striking increase in the visibility of temper as the surfaces weather (see Figure 22 for unweathered interior surface versus Figure 23 for a weathered interior surface). This difference in preservation suggests that the sherd recovered from the post molds were buried much more rapidly than the sherd found in other stratigraphic contexts. Several of the sherd recovered from post mold 2.8, including the largest rim sherd recovered from the site (Figure 24a) were found at a 45-degree angle, as if they had dropped into the post-hole after the removal of the post and came to rest on the side of the hole prior to being buried (Figure 9). Although a root in this post mold may have contributed to the angle at which these sherd were found, their level of preservation supports our contention of rapid burial. A relatively rapid post-abandonment collapse of a structure left on site could result in a similar burial of sherd in post molds, but this scenario would probably result in at least some of the post molds being destroyed or altered in ways that would have been observed during excavation.

Another plausible way for voids to form where the posts were placed is for the structure to burn with the posts being partially or completely consumed. However, as noted above, the matrix of the post molds contained only small flecks of charcoal, insufficient in quantity to suggest that the structure burned.

Based on the distribution and density of sherd and chipped stone debitage recovered from Feature 2 (Figure 10), we hypothesize that debris in the interior of the structure was swept to the west and southwest edges. During this cleanup, some of the sherd were probably swept into contact with the support poles represented by subfeatures 2.3-2.10. When the site was vacated, the poles were removed and the sherd in contact with or close to these poles dropped into the voids left by their removal and were subsequently buried and preserved, while the sherd left on the surface were buried more slowly (if at all) and subject to much greater weathering.

Although an argument can be made for Feature 2 representing either a small hide-covered tepee or a wickiup, a preponderance of evidence points to a structure of uniform, evenly spaced poles that was removed from the site at abandonment by the residents. Though the evidence is far from incontrovertible, we believe that Feature 2 does represent a tepee, which in turn suggests that it was constructed by people adapted to the Plains at a time when these people had not yet come into contact with wickiup builders, or at least had not yet adopted its use during forays into the mountains.

Feature 3 (Test Unit 6)

Surface reconnaissance of the site located two granite rocks partially exposed in the surface sediment. These appeared to be unusual given the ubiquitous surface gravel covering the ridge and the absence of near-surface bedrock. A 1 x 1 m excavation unit was placed over these two surface rocks. A high density of micro debitage was also present on the surface of the excavation unit lending additional credence that a hearth feature might be present. Hearths were often the locus for activities such as stone tool rejuvenation.
Figure 10. Artifact density maps for Feature 2. A. Ceramic density; B. Debitage density.
Figure 11. Map of Feature 3.
Excavation of the unit was conducted in 5 cm topographic levels following the slope of the ground surface. A third rock was located within the unit roughly configuring a circle measuring approximately 50 cm in diameter (Figures 11 and 12). Completion of the first level indicated that an extremely slight change in soil texture and color was evident within the center of the three rocks. Continued excavation into the second level could not discern an exterior limit for this color change, which decreased with depth. Therefore, the “stain” or feature interior was not bisected. Slight oxidation and blackening of the interior side of the rocks was noted (it should be further noted that the Hayman fire did not blacken the surface of these rocks). Burned, fragmented bone was recovered from the interior of the configuration in both levels as well as micro flakes. Of note was the recovery of bone wedged in two places against the exterior of the southwest rock. The function or intention of this occurrence is not known.

Although a basin could not be defined within the configuration of rocks, circumstantial evidence suggests that Feature 3 is indeed a hearth. Oxidation and blackening of the interior surface of the rocks; the occurrence of burned, fragmented bone within the configuration and not outside (the “wedged” bone excepted); and the initial slight color and texture change of the configuration interior all suggest that an ephemeral hearth was present, shallowly excavated (if at all) into the surface matrix. The presence of three rocks suggests a tripod hearth configuration wherein a pot could be placed over an open fire. The shallow nature of the hearth contributed to its ephemeral nature. Charcoal and ash were likely blown out of the depression rather quickly and replaced with fine-grained eolian sediment.
Cursory analysis of the bone by Kimberley Fariello (RMC Consultants) suggests that the bone assemblage is comprised of rib and long bone fragments (possibly tibia) of a large to very large mammal. Most of the bone appears to have been exposed to heat, but none are calcined or blackened. The surface of some of the fragments appears polished, but this is probably a result of partial mineralization rather than pot polish. Cultural modifications including possible cut marks and striations were observed on bone that was “wedged” behind one of the rocks (FS 528). Despite the fragmented nature of the bone, it is evident that the bone that is identifiable comes from parts of the carcass that would typically be the first consumed and subject to more intensive processing such as marrow extraction. The presence of “greasy” flakes and highly fragmented bone suggests the feature was used to produce bone grease.

**Feature 4**

Feature 4 was an area of charcoal stained soil and large chunks of charcoal that penetrated into the C soil horizon in the northeast quadrant of Test Unit 9 in EU-1 (Figure 6). This feature was initially thought to be a basin hearth, and so the margins were defined, the feature was mapped, and then bisected along a north-south line. When the fill was removed from half the basin, several burned roots were defined radiating out from the purported basin. No cultural materials were found associated with this feature, and a single sherd from the base of the vessel found in the southwestern part of EU-1 was the only artifact recovered from this test unit. Based on this information, Feature 4 was determined to be a burned root of a shrub or small tree and not cultural in origin.

**Feature 5**

Excavation of TU-14 of EU-1 uncovered a dark organic cultural stain. The stain extends between Post-holes 2.4 and 2.5 of Feature 2, across the north half of the unit or the very southern limit of the feature interior (Figure 6 and Figure 13, below). Eight ceramic sherds were point plotted within the stain. The outline of the cultural stain is undulating and does not conform to any definitive feature. Composition of the soil matrix within the cultural stain consisted of small organic material and charred woody remains. Careful excavation through the burned portion of the A soil horizon indicated a clear break between the portion of the subsurface burned during the Hayman fire and this feature. This feature is interpreted as cultural detritus swept during occupation of Feature 2. Feature 2 is located on a slight south slope, which would have facilitated a down-slope transport of cultural detritus.
MATERIAL CULTURE

Lithic Technology

The lithic technology present at Eureka Ridge is divided into biface, modified flake, projectile point, and debitage analytical categories. These categories are discussed as inclusive and distinct lithic technologies; classification of a lithic artifact into one of these categories is based on a defined set of criteria (Andrefsky 1998; Schott 1994). A biface is defined as a stone tool that exhibits intentional flaking on both sides; a modified flake is defined as a flake that exhibits intentional unifacial edge retouch (or modification) that is not inherent to basic flake morphology; projectile points are bifacial stone tools that are manufactured according to a formal or pre-determined shape, generally intended to be hafted onto a foreshaft; finally, debitage is the accumulated flake assemblage or detritus that results from core reduction or the intentional retouch of a stone tool (what Andrefsky (1998:9-10) refers to as “objective” pieces). A flake, at the minimum, must exhibit a single interior surface, but may be further identified by the presence of a striking platform, bulb of percussion, and intact margins (cf. Sullivan and Rozen 1985).

The second level of analysis considers the lithic technology at the assemblage level in order to make broad generalizations. Characterizing a lithic technology is often
accomplished by considering broad dualistic concepts such as formal / informal and
curation / expedient (Parry and Kelly 1987). These concepts have been used to infer
hunter-gatherer mobility strategy. Raw material availability is a primary consideration
that factors in the composition of hunter-gatherer toolkits and may be further used to infer
settlement area (Nelson 1991; Bamforth 1986; Andrefsky 1994). Determining the
difference between formal and informal stone tools is often subjective and involves
evaluating the degree of energy invested in the manufacture and maintenance of a stone
tool. Projectile points generally embody the classic formal stone tool. They are generally
manufactured based on a preconceived mental template that meets cultural requirements
pertaining to style, while maintaining functional form. Utilized flakes reflect the opposite
end of the formal/informal spectrum, entailing little investment of energy, and are often
quickly discarded in the same location as they were manufactured. Curative technologies
are those that are maintained over time through transport and rejuvenation, mitigating the
effects of unanticipated need or lack of raw material from which to produce new tools.
An expedient stone tool technology is generally linked with sedentary groups who have
either secured an abundance of raw material at a base camp, have situated themselves
within close proximity to a raw material source, or embed procurement within logistical
movements (cf. Binford 1980; Parry and Kelly 1988). The spatial distribution and
distance of raw material between source and site are prime indicators of forager and
collector economies.

Four analytical categories are discussed below: Modified flakes were divided into two
types based on an evaluation of energy investment, inferred from the consistency in flake
blank (and therefore the presence of a prepared core) and edge retouch. Attempts were
not made to identify utilized flakes in the lithic assemblage. Biface technology is
evaluated according to stages, which distinguish between varying levels of reduction (i.e.,
flaking) and width/thickness ratio (Callahan 1979). Projectile points were described and
compared with similar types in the literature. Debitage is summarized with greater
import being weighted towards debitage recovered during test excavation. Finally, raw
material type is summarized for the lithic assemblage as a whole with added attention
given to percentage and distance to source.

Modified Flakes: Types 1 and 2

A total of 24 modified flakes were collected and analyzed. Modified flakes are
differentiated from unifaces in this analysis. Unifaces, as defined here, embody a distinct
technological form of stone tool that is completely flaked on one side. Modified flakes
are manufactured from flake blanks and unifacially retouched along one or more edges.
Two types of modified flakes were identified in the assemblage. Type 1 modified flakes
were manufactured from prepared, uni-directional cores, and represent a formal category
of stone tool. The direction of force was intended to curve the distal end of the flake to
the core interior in order to produce a thick distal edge. Steep secondary flakes were
removed to produce high angle retouch along the distal ends. A few Type 1 modified
flakes exhibit lateral margins that suggest they were hafted (FS #'s 39, 7, and possibly FS
12, Figure 14). Type 1 modified flakes include what are usually classified as formal
descrapers. Type 2 modified flakes exhibit low angle retouch along primarily the lateral
margins of the flake. The shape of Type 2 modified flakes seemed to have not been an
important consideration; rather flakes were chosen for their large size and appropriate
edge angles. In other words, Type 2 modified flakes are expedient, lacking formal shape and having less intensive and patterned marginal flaking.

The preponderance of modified flakes in the stone tool assemblage (24, versus 19 bifaces and six biface fragments) suggests that hide processing was an important activity. The distribution of these tools suggests that hide processing activities were not restricted to certain areas of the site during all of the occupations, although the majority was found on the west side of the site (Figure 15).

Figure 14. Representative modified flakes (end scrapers) collected from Eureka Ridge. a. FS-11 b. FS-7 c. FS-12 d. FS-39 e. FS-28a f. FS-22 g. FS-15a h. FS-18. Top row are Type 1 and bottom row are Type 2 modified flakes.
Figure 15. Distribution of Modified Flakes at Eureka Ridge.
<table>
<thead>
<tr>
<th>FS#</th>
<th>Tool Type</th>
<th>Raw Material</th>
<th>Condition</th>
<th>Length x Width x Thickness (mm)</th>
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<tbody>
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<td>3</td>
<td>Type 2:</td>
<td>Chert</td>
<td>Complete</td>
<td>52.9 x 23.2 x 11.0</td>
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<td></td>
<td>Side scraper, low angle edge retouch</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
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<td>Cobble cortex</td>
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<td>Chert</td>
<td>Complete</td>
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<td></td>
<td>End/side scraper, low and high angle edge retouch</td>
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</tr>
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<td>10</td>
<td>Type 2:</td>
<td>Orthoquartzite</td>
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<td>Side scraper, low angle edge retouch</td>
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<td></td>
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<td>Dischoidal scraper, high angle edge retouch</td>
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<td>End/side scraper, low and high angle edge retouch</td>
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<td>Possible projectile point preform</td>
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<td>Flake</td>
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<tr>
<td>39</td>
<td>Type 1: End/side scraper, low and high angle edge retouch</td>
<td>Chert</td>
<td>Complete</td>
<td>36.6 x 25.7 x 13.2</td>
</tr>
<tr>
<td>40</td>
<td>Type 2: End scraper, high angle edge retouch</td>
<td>Ken Caryl Agate? Cobble cortex</td>
<td>Core Shatter?</td>
<td>42.7 x 17.3 x 27.0</td>
</tr>
<tr>
<td>87</td>
<td>Type 2: Unifacial edge retouch, very low angle</td>
<td>Quartz crystal With cortex</td>
<td>Broken Flake</td>
<td>15.2 x 17.6 x 3.6</td>
</tr>
<tr>
<td>519</td>
<td>Type 2: Side scraper, low angle edge retouch</td>
<td>Denver petrified wood?</td>
<td>Flake fragment</td>
<td>18.7 x 31.4 x 6.2</td>
</tr>
<tr>
<td>539</td>
<td>Type 2: Side scraper, low angle edge retouch</td>
<td>Wall Mountain Tuff</td>
<td>Flake Fragment</td>
<td>75.0 x 72.0 x 22.0</td>
</tr>
<tr>
<td>541</td>
<td>Type 2: Side scraper, low angle edge retouch</td>
<td>Heat-treated (waxy) Petrified wood Unknown source (tabular)</td>
<td>Flake Fragment</td>
<td>18.0 x 18.5 x 5.1</td>
</tr>
<tr>
<td>560</td>
<td>Type 2: Side scraper, high angle edge retouch</td>
<td>Heat-treated Petrified Wood Unknown source</td>
<td>Complete</td>
<td>10.4 x 8.0 x 3.1</td>
</tr>
<tr>
<td>562</td>
<td>Type 2: End scraper, low angle edge retouch</td>
<td>Chalcedony (mottled)</td>
<td>Flake Fragment</td>
<td>16.8 x 12.2 x 5.5</td>
</tr>
</tbody>
</table>

**Biface Technology**

Bifaces were classified according to reduction stage (Callahan 1979). This method recognizes that a biface advances through a number of different stages within a reduction sequence, before becoming a finished biface. Stages within the reduction sequence can be determined by examining the width/thickness ratio. Early stage bifaces are defined by low width to thickness ratios (Figure 16), and relatively thin late stage bifaces are defined by high ratios (see Figure 20 below under Projectile Points). Andrefsky (1998:181) provides a technical description of biface stages. A total of 16 bifaces were collected from Eureka Ridge that could not be placed in a category such as projectile points. All biface stages are represented in the assemblage.

Two biface specimens are present that deserve additional attention. These are FS-23 and FS-75. Field Specimen 23 is a large, thin biface manufactured from Kremmling chert. Three pieces of this artifact were recovered and two of these refit. However, a large segment of this artifact was not found (Figure 17). Examination under low magnification indicated little use-wear other than slight edge polish suggesting use as knife and as a multi-functional core that is efficiently transportable (Kelly 1988). Specimen 75 is a bi-
pointed biface with a thick longitudinal ridgeline and pronounced “shoulder.” Raw material is a banded white chert that has tentatively been identified as Alibates chert from the Texas panhandle (Figure 18). Four centimeters of the biface below the “shoulder” (approximately one-third of the artifact) is probably the portion that was inserted in the socket of a haft. The “shoulder,” then, is possibly a remnant of the blade that was unable to be reworked due to its proximity to the haft. The remaining two-thirds of the biface has been reworked from one surface creating a plano-convex cross-section. Flake scars along the blade portion are steep and terminate at the midline. A few large conchoidal flake scars on the portion believed to have been in the haft indicate that the artifact was taken out of its haft and sharpened for use. This artifact was retouched on alternating edges giving it a beveled cross-section. Examination under low magnification indicated heavy step-fracturing along the length of the artifact suggesting use against hard surfaces. The heaviest use is near the tip and includes polish and blunting of the edges, which may indicate use as a drill. Similar artifacts are illustrated in Gunnerson (1960:Plates 14 and 15; 1979:Figure 4). These are described as drills, “cigar shaped with lateral lugs, a type restricted in the Plains to Dismal River” (1960:248). To our knowledge, the occurrence of this artifact type is rare or completely absent in eastern Colorado.

Although distributed throughout the site, the majority of bifaces were found either within or near concentrations of debitage such as AC-7 and AC-8 (Figure 19).

**Projectile Points**

Three projectile points, four projectile point fragments, and two projectile point preforms were recovered from Eureka Ridge. Measurements for the relatively complete diagnostic projectile points are found in Table 5. All three of the relatively complete points are side-notched, two (FS-15c and 16, Figure 20 a and c) of which exhibit slightly concave bases. FS-15c is manufactured from a fine textured tan-gray orthoquartzite (possibly Dakota formation) and FS-16 is of thermally altered red chert (possibly Trout Creek). Both of these points terminate in impact fractures. Field Specimen 2 (Figure 20b) has a broad, shallow basal notch with a pronounced spur on one corner tang and the other rounded from reworking. This point is patinated on both sides; limited reworking or post depositional damage has exposed the maroon chert underneath the patina. The former two side-notched points also exhibit slight spurs on one corner tang. All three of these side-notched points are well-made exhibiting bi-convex to plano-convex cross-sections and have been impact fractured.

Comparison of these projectile points with those in the literature indicates a strong similarity with un-notched and side-notched points recovered from the Lovitt site in western Nebraska (Gunnerson 1960:Plates 12 and 13). However, the occurrence of small side-notched points is ubiquitous on the Plains during the Middle Ceramic period and later (Gilmore et al. 1999), and does not constitute a clear diagnostic indicator in the culture-historical sense. Rather, they are considered a horizon marker with a broad spatial and temporal distribution. Concave and basal notched points on the Plains are often referred to as Plains side-notched and Desert side-notched, respectively. Projectile points were not recovered from other Dismal River sites in Colorado to facilitate comparison.
Based on the small size and thickness of the four projectile point fragments (Figure 20d-g), they are apparently from arrow-sized points, and are manufactured from brown chert (Figure 20d), two of Trout Creek chert (Figure 20e and f), and Dawson petrified wood (Figure 20g). One of these (FS-37, Figure 20e) may be a fragment of a drill. Two triangular late-stage bifaces are though to represent projectile point preforms (Figure 20h and j). These artifacts are manufactured from brown chert (Figure 20h) and heat-treated Trout Creek chert (Figure 20j). The last artifact covered in this section is a relatively large biface of Trout Creek chert that is lanceolate in shape with a slightly concave base (Figure 20i). This artifact has basal thinning flakes removed from both faces, and superficially resembles a small Clovis point. However, the lack of grinding on the base lateral margins, its overall small size (compared to other Clovis points) and its location on a single component Late Prehistoric site suggests that this resemblance is probably coincidental, although it could represent an older point curated by the residents of Eureka Ridge.

Figure 16. Example of early and middle stage bifaces from Eureka Ridge. a. FS-35 b. FS-9 c. FS-5 d. FS-13b e. FS-41 (end scraper) f. FS-6.
Figure 17. Large fragmentary biface of Kremmling chert found in AC-4 (FS-23).

Figure 18. Bi-pointed biface (FS-75) recovered partially buried in AC-1, prior to excavating TU-2. Similar artifacts have been found at Dismal River Aspect sites on the Central Plains (Gunnerson 1960) and in northern New Mexico (Gunnerson 1979).
Table 4. Biface data by field specimen number.

<table>
<thead>
<tr>
<th>FS #</th>
<th>Tool Type</th>
<th>Raw Material</th>
<th>Condition</th>
<th>Length x Width x Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Stage 3</td>
<td>Low angle edge retouch</td>
<td>Table Mountain Chert</td>
<td>Medial fragment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Stage 4, Unfinished preform</td>
<td>Trout Creek Chert</td>
<td>Distal fragment</td>
<td>49.0 x 40.4 x 7.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Stage 5 Projectile point tip</td>
<td>Chert</td>
<td>Distal fragment</td>
<td>14.7 x 11.0 x 1.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Stage 3 Use wear</td>
<td>Chert (pink/white)</td>
<td>Complete</td>
<td>41.0 x 31.0 x 7.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13a</td>
<td>Stage 5 Projectile Point Tip</td>
<td>Trout Creek Chert</td>
<td>Tip only</td>
<td>13.9 x 9.9 x 2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13b</td>
<td>Stage 2 Edged biface</td>
<td>Dawson Petrified Wood</td>
<td>Complete</td>
<td>46.1 x 42.9 x 7.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat spalled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14b</td>
<td>Stage 5 Drill fragment?</td>
<td>Dawson Petrified Wood</td>
<td>Distal Fragment</td>
<td>16.7 x 10.0 x 2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat treated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15b</td>
<td>Stage 3 Snapped end scraper</td>
<td>Obsidian</td>
<td>Distal present</td>
<td>21.1 x 21.0 x 7.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Stage 4 (Possible Reworked Clovis projectile point - fluted)</td>
<td>Trout Creek Chert</td>
<td>Tip missing</td>
<td>43.4 x 24.2 x 7.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Stage 5 Preform (hafted knife?)</td>
<td>Table Mountain Chert</td>
<td>Proximal fragment</td>
<td>24.1 x 19.5 x 5.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Stage 5</td>
<td></td>
<td>3 Fragments</td>
<td>~130 x ~40 x ~7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Stage 4 Broken preform</td>
<td>Trout Creek Chert</td>
<td>Distal fragment</td>
<td>28.5 x 34.0 x 5.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat treated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Stage 5 Projectile point or drill tip</td>
<td>Trout Creek</td>
<td>Distal fragment</td>
<td>8.9 x 7.5 x 3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Stage 2 End scraper: high angle edge retouch</td>
<td>Chert (banded)</td>
<td>Complete</td>
<td>57.7 x 39.4 x 13.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Biface tip</td>
<td>Trout Creek</td>
<td>Distal fragment</td>
<td>8.7 x 7.4 x 2.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Stage 5 bipointed, beveled, shouldered</td>
<td>Banded Chert (white) Texas Alibates?</td>
<td>Complete</td>
<td>94.4 x 21.2 x 8.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 19. Distribution of bifaces at Eureka Ridge.
Figure 20. Projectile points and selected small bifaces from Eureka Ridge. a. FS-15c b. FS-2 c. FS-16 d. FS-8 e. FS-37 f. 13a g. FS-14b h. FS-20 i. FS-17 j. FS-14a

<table>
<thead>
<tr>
<th>FS #</th>
<th>Length</th>
<th>Width</th>
<th>Thickness</th>
<th>Haft Length</th>
<th>Base Width</th>
<th>Neck Width</th>
<th>Raw Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>(24.5)</td>
<td>14.4</td>
<td>3.2</td>
<td>6.8</td>
<td>8.4</td>
<td></td>
<td>Unknown chert patinated</td>
</tr>
<tr>
<td>15c</td>
<td>(18.5)</td>
<td>14.5</td>
<td>3.4</td>
<td>4.5</td>
<td>14.5</td>
<td>9.3</td>
<td>Orthoquartzite</td>
</tr>
<tr>
<td>16</td>
<td>(20.1)</td>
<td>(13.5)</td>
<td>3.0</td>
<td>5.2</td>
<td>(13.5)</td>
<td>7.2</td>
<td>Red chert</td>
</tr>
</tbody>
</table>

Parentheses denote an incomplete measurement. All measurements recorded in millimeters.
Debitage Assemblage

A total of 212 surface flakes and 117 flakes recovered from test units (both surface and subsurface) were analyzed. There are clear indicators that late-stage biface manufacture and edge rejuvenation were the primary tasks contributing to the debitage assemblage. Core reduction is indicated solely by AC 8, a concentration of large, cortical Dawson petrified wood flakes that represent a single reduction event. Cortex is virtually nonexistent in the assemblage and a high percentage of the flakes correspond with size grades 2 and 3. In fact, only 14% (n=29/210) of the flakes exhibit cortex from the surface assemblage and 99% of flakes recovered from the test units did not exhibit cortex (n=116/117). If flake size is a relative indicator of the objective piece from which it was detached, then it is telling that 93% of the flakes from the test units correspond to size grades 1, 2, and 3, indicating that biface manufacture and rejuvenation were primary tasks. Much of this percentage includes flakes recovered from the surface and subsurface of TU-6 placed directly over what is believed to be an ephemeral hearth (Feature 3). Fifty-three flakes of the 117 recovered from test units were from TU-6; of the 53 flakes recovered, 43 or 81% are size grades 1 and 2. No cortex was found on these flakes.

The surface assemblage represents an amalgamation of different activity areas and is less amenable to meaningful characterization. Size grade distribution is more evenly divided, with 44% of the flakes corresponding to grades 1 and 2; 30% with size grade 4 and 5; and 25% with size grade three. Still, a majority of the flakes are small, further supporting an overall emphasis on stone tool manufacture and rejuvenation. Sullivan and Rozen assert that broken and flake fragments result from stone tool manufacture, and core reduction produces more complete flakes and shatter. Although Sullivan and Rozen’s interpretations have been questioned (Amick and Mauldin 1989; Ensor and Roemer 1989; Prentiss and Romanski 1989), taken at face value, 62% of the surface assemblage are broken flakes and flake fragments; 38% are complete flakes and shatter. As previously mentioned, only 14% of the surface assemblage flakes exhibit cortex. The lack of evidence for core reduction on site indicates that early stage bifaces and large, non-cortical flakes were produced at the quarry source and transported to Eureka Ridge as flake blanks.

Raw Material

Raw material from at least nine named sources are present at Eureka Ridge (Figure 21). The best represented sources are Dawson petrified wood (34%) derived from the Paleocene Dawson Arkose from the Colorado Piedmont east of the Front Range, and Trout Creek chert (24%) derived from the Ordovician Manitou limestone from the Arkansas Hills area north and south of the Trout Creek Pass. These sources are also represented by the highest percentage of size grade 5 specimens indicating that both large blanks and early bifaces of this material type were transported. The number of lithic raw material sources and their frequency of occurrence in the chipped stone assemblage are revealing in terms of settlement patterns. The relative high percentage of Dawson formation petrified wood in the assemblage of unmodified flakes, the relative large size of these flakes and the fact that the only core reduction represented in this assemblage is of this material, all suggest that the residents of Eureka Ridge had most recently been east of the Front Range in the Palmer Divide, an upland area of discontinuous ponderosa pine
forest and plains grassland that is in essence an extension of montane environments out onto the plains for a distance of over 70 km (Gilmore and Larmore 2003). The Dawson formation is the most common bedrock throughout the Palmer Divide, and petrified wood is found in primary contexts as whole fossilized trees or in secondary contexts as cobbles in low order drainages throughout the area where the Dawson is exposed at the surface. The closest source of Dawson petrified wood to Eureka Ridge is 30 km as the crow flies, but by following Turkey Creek and then the South Platte River onto the Plains (the most likely route), the distance is closer to 45 or 50 km.

The second most common material is from the Trout Creek quarry (Chambellan et al. 1984), located approximately 65 km both as the crow flies and by best route from Eureka Ridge, which most likely entailed crossing over Wilkerson or La Salle Passes to access South Park. Small percentages of Table Mountain and Kremmling chert indicate travel from the north during which the bulk of these raw materials were used and discarded. What little remained upon arrival in South Park was discarded before utilizing the Trout Creek or other sources local to South Park such as non-Dawson petrified wood and Dakota orthoquartzite (Black 2000; 2002). The latter two sources, however, are least represented in the assemblage. Because Dawson petrified wood and Trout Creek chert constitute 57% of the total assemblage, it is reasonable to suggest that a settlement pattern oriented east-west or Front Range-mountain was practiced.

Raw material frequency varies between the three major excavation units (Test Units 2 and 6 and Excavation Unit 1). For instance, Dawson petrified wood dominates the assemblage from TU-6 (77%); quartz crystal (30%) and Table Mountain jasper (50%) dominate the assemblage from TU-2; and the assemblage from EU-1 is divided between three raw material types: Dawson petrified wood (26%), obsidian (24%), and chert from unknown sources (26%). This distribution may indicate direction of movement for various occupation periods; the biface manufacture and rejuvenation that took place near Feature 3 (TU-6) was preceded by travel from the Palmer Divide based on high frequency of Dawson petrified wood; occupation of the east end of the site (TU-2) was by people who had just come from the west and north, based on the occurrence of Table Mountain jasper. Use of Feature 2 (EU-1) is less clear in terms of direction or origination; the obsidian could have been traded for or even directly obtained, and the unknown chert could be related to Front Range sources and obtained in conjunction with the Dawson petrified wood.

The variety of raw material sources represented at Eureka Ridge suggests that the occupants were familiar with the full spectrum of raw material sources available for the region. Distribution of raw material types among the stone tools shows equal variability in terms of selection. The presence of formations containing orthoquartzite and petrified wood both within South Park and along the Front Range complicate identifying the settlement patterns of those who occupied Eureka Ridge. Thirty-three percent of the modified flakes and 69% of the bifacial stone tools could be assigned to a named raw material source. Trout Creek chert seems to have been preferentially selected for biface manufacture and Dawson petrified wood for modified flakes. Only one of the projectile points could be assigned to a known raw material source. All of the ten obsidian samples sent for x-ray fluorescence (XRF) were sourced to the Jemez Mountains of northern New Mexico, specifically the Cerro del Medio (7 samples) and Obsidian Ridge (3 samples).
sources (Skinner 2004, Appendix B). This is in contrast with the obsidian sourced from the Pinnacle site (Tucker et al. 2003), which was traced to Obsidian Cliffs in northwest Wyoming. All surface obsidian was collected, totaling nine flakes and one bifacial stone tool, all of which were submitted for XRF analysis. An additional 14 obsidian flakes were recovered during testing. Together, 24 artifacts of obsidian do not constitute abundance in terms of the overall lithic assemblage. However, it would be interesting to compare the incidence of obsidian at Eureka Ridge with other Late Period Front Range sites.

Figure 21. Location of lithic raw material sources recognized in the lithic assemblage of the Eureka Ridge site (red star).

This number does indicate that one or more large core or core flakes were obtained, most likely in the context of trade. If the obsidian were directly procured from sources in New Mexico, it would be plausible to expect that basalt also would have been utilized and present within the assemblage, sources of which are present between Eureka Ridge and the Jemez Mountains. The surface assemblage of nine flakes indicates core reduction (size grades 4 and 5; single facet platforms and flake fragments), whereas the obsidian
recovered during testing are exclusively size grades 1-3, includes no shatter, and tend to exhibit multiple faceted platforms. The single obsidian bifacial tool (FS-15b) recovered is an ovoid flake fragment finely retouched on one surface with several large flake scars on the opposite surface. It appears to have been an end scraper snapped at the haft.

**Discussion**

From the lithic assemblage at Eureka Ridge tentative statements may be made regarding the settlement pattern(s) of the site occupants. The rate of discard, degree of secondary retouch on formal stone tools, and raw material type are useful indicators of the degree of mobility. Exhausted formal tools outnumber expedient ones by 2:1. The formal end scrapers (Type 1 modified flakes) appear to have been discarded prior to site abandonment and while still useful, probably with the understanding that a known tool stone source was near a future settlement or could be procured as an embedded activity. The end scrapers, however, were all heavily retouched from many use episodes. All three of the relatively complete projectile points were discarded with impact fractures to the tip; at least two of these had been previously reworked. A possible fourth projectile point (FS-14a) was discarded while still useful, but is classified as a preform for purposes of analysis. Reworked projectile points and heavily utilized end scrapers suggest sustained mobility for distances that necessitated conservation of raw material. Other useful indicators of frequent mobility include the large, finely flaked Kremmling chert knife (FS-23) and the heavily retouched bi-pointed biface (FS-75), possibly manufactured from Alibates chert from the Texas Panhandle. Both suggest high mobility; large bifaces effectively combine edge conservation with the ability to produce expedient flakes (Kelly 1988), while the bi-pointed biface, if indeed originating from the Texas Panhandle, exhibits the retouch and conservation commensurate with distance traveled. The distribution of raw material indicates utilization of two relatively close sources (Dawson petrified wood and Trout Creek chert), which probably reflects the core of their settlement area (between the Palmer Divide and South Park). Considerably smaller percentages of Kremmling chert and Table Mountain jasper suggest their settlement round incorporated the Southern Rocky Mountain interior likely similar to what Benedict terms “rotary” movement (1992), although in this case it may have been counter-clockwise and likely did not entail a full circuit. Equally small percentages of quartz crystal (local to Eureka Ridge) and orthoquartzite and petrified wood (obtainable in South Park) suggest opportunistic or embedded procurement.

Determining whether their movement followed a rotary pattern is not possible given the information available at present, but it is probable that this movement was variable through time, and may have even followed more of a direct up/down pattern between the Palmer Divide and South Park similar to Benedict’s (1992) piston model. Given the site location and the high percentage of rejuvenation flakes in the assemblage, it is probable that raw material conservation was practiced on site due to a lack of immediately accessible raw material. A more dynamic approach to raw material procurement was practiced during residential movement based on their inferred knowledge of diverse raw material sources present in the assemblage. As is typical when attempting to interpret hunter-gatherer settlement patterns (cf. Binford 1980), to pigeon-hole an archaeological manifestation into forager or collector strategies is problematic and probably untenable given the variability in resources from year to year. Therefore, a mixed forager-collector
strategy is inferred based on the long-term use of Eureka Ridge (summer/fall), varied raw material use, and conservation of existing stone tools such as that exhibited by the formal end scrapers (Type 1) and projectile points.

Ground Stone

Five pieces of ground stone were found during all phases of investigation at Eureka Ridge. Three metate fragments, one large fragment of a unifacial mano and a polished alluvial cobble thought to be a possible hide working tool were found on the surface of the site. Materials are all granitic and presumed local in origin. The distribution of these artifacts is definitely clustered (Figure 22). A mano (FS-536) and a metate fragment (FS-537) are located in proximity to one another in the central portion of the site, and two metate fragments (FS-19 and FS-538) and the hide working tool (FS-59) clustered to the southwest of AC-6. This distribution suggests that these two loci may have been processing areas.

Figure 22. Distribution of ground stone artifacts at Eureka Ridge.
Ceramics

Almost 500 ceramic sherds representing at least seven and perhaps as many as ten vessels were recovered during all phases of work at the Eureka Ridge site. These sherds were found in four artifact concentrations (AC) of sherds associated with flaked lithic and ground stone artifacts (AC-1, AC-3, AC-4 and AC-5), and one concentration exclusively of sherds (FS-33). A sample of sherds from all five concentrations was analyzed by David V. Hill (2004a) and petrographic analysis was performed on three sherds (Hill 2004b). These analyses as well as observations and interpretations by the authors of this document are summarized below by artifact concentration, and additionally a summary of this information in tabular form by provenience unit from east to west is found in Table 6.

Table 6. Eureka Ridge Ceramics by Provenience Unit.

<table>
<thead>
<tr>
<th>Provenience</th>
<th># vessels</th>
<th>Vessels defined by-</th>
<th># body sherds</th>
<th># rim sherds</th>
<th>Surface treatment</th>
<th>Temper</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-1</td>
<td>2-4</td>
<td>Rim form, surface treatment</td>
<td>82</td>
<td>2</td>
<td>Wiped; cord-marked</td>
<td>Fine biotite, feldspar and quartz</td>
</tr>
<tr>
<td>FS-33</td>
<td>1</td>
<td>Uniformity of material</td>
<td>15</td>
<td>None</td>
<td>Unk.-eroded</td>
<td>Fine biotite, feldspar and quartz</td>
</tr>
<tr>
<td>AC-3</td>
<td>1</td>
<td>Uniformity of material</td>
<td>157</td>
<td>10</td>
<td>Wiped</td>
<td>Coarse greywacke</td>
</tr>
<tr>
<td>AC-4</td>
<td>2-3</td>
<td>surface treatment</td>
<td>204</td>
<td>10</td>
<td>Wiped; cord-marked; simple stamped</td>
<td>Fine biotite, feldspar and quartz</td>
</tr>
<tr>
<td>AC-5</td>
<td>1</td>
<td>Uniformity of material</td>
<td>2</td>
<td>2</td>
<td>Scraping and burnishing</td>
<td>Fine biotite, feldspar and quartz</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7-10</strong></td>
<td>-</td>
<td><strong>460</strong></td>
<td><strong>24</strong></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

AC-1

A total of 84 sherds including two rim sherds representing between two and four vessels were collected from the surface of AC-1 or recovered from TU-2. At least two separate vessels can be distinguished by differences in rim morphology. One rim is tapered to the lip and slightly everted (Figure 23a), and the other is also everted, but the lip was folded over to the exterior while the paste was still plastic to form a slight band at the lip (Figure 23b). Three different surface treatments are represented in the body sherds. Some sherds have been smoothed while the clay was still moist; others lack evidence of surface manipulation, and still others display faint small parallel linear depressions in their surfaces. After these depressions (possibly cord-impressions) were made, the potter smoothed the surface of the vessel with a wetted fabric or wet hands, obscuring the nature of the impressions. Paste color ranges from 10YR3/1 very dark gray to 10YR 3/3 dark brown. The paste of all the sherds contains abundant biotite (black mica) along with white, gray and pink feldspar and quartz, which suggests that all of the vessels were manufactured with clay from the same source.
A total of 15 body sherds representing a single vessel were recovered from the surface at this location (Figure 24). During the original survey the single sherd that was found at this location was given the field specimen number FS-33. Subsequent investigation of this location during the testing phase at the site resulted in the discovery of 14 additional sherds. All of these sherds are small (< 2.5 cm) with highly eroded interior and exterior surfaces, resulting in a rough surface texture with numerous exposed pieces of temper. The mottled reddish brown and gray color of these sherds suggests that they have been refired. The paste of these sherds contains abundant biotite, white and pink feldspar and quartz, and is similar to the paste and temper composition of the other vessels (except AC-3).

Figure 23. Rim sherds from AC-1. The image has been lightened to accentuate detail.
AC-3

A total of 167 sherds including ten rim sherds and what is apparently a base sherd representing one vessel were collected from the surface and recovered from the excavation of the test units in EU-1. Rim sherds from this vessel are slightly everted to direct with diagonal tooled impressions in the lip that were made when the paste was still plastic (Figure 25). The deformation in the lip on the exterior of the rim and the smoothness of the impressions suggests that they were made by rolling the tool from the interior toward the exterior as opposed to incising the grooves or dragging the tool through the paste. The surfaces of most of the sherds recovered from the surface of AC-3 are eroded, particularly the inner surfaces, making determination of surface treatment problematic. However, sherds recovered from the post molds of Feature 2 are much better preserved, suggesting rapid burial within these sub-features. Both the interior and exterior of the latter sherds appear to have been wiped with something soft while the paste was still wet, as evidenced by faint fine striae parallel to the rim on both interior and exterior surfaces. Large (1 cm) low ridges appear on the exterior surface of several sherds and were originally thought to be coils, but they are apparently oriented at an approximate 45° angle from the rim. Based on these irregularities on the surface and the projection of pieces of temper through the surface, the vessel was not finished by either scraping or paddle and anvil. The paste of this vessel lacks the biotite that is prevalent in the paste of sherds from the other concentrations (Hill 2004a). Temper is coarse, with the largest pieces surpassing 6 mm in diameter, and is derived from a poorly sorted sediment or greywacke instead of the granite grus used for the other vessels (Hill 2004b). Overall, the sherds from this vessel are thicker than the other vessels, with a maximum of 11.2 mm at the base.
A total of 214 sherds, including 10 rim sherds representing between two and three vessels were collected from the surface of AC-4 or recovered from TU-1 (Figure 26). Rims are everted, with at least two vessels represented based on differences in surface treatment of rim sherds, and a possible third vessel represented by a cord marked or simple stamped surface treatment. One vessel has a relatively rough exterior surface that was finished by scraping parallel to the rim, indicated by striae on the interior surface produced by temper being dragged across the surface (Figure 26h interior). At least one body sherd from AC-4 has parallel lineal impressions that are either cord impressions or simple stamping that were subsequently smoothed. The paste of this sherd appears laminated and many of the temper particles are oriented parallel to the surface of the sherd, suggesting finishing with a paddle and anvil. Several of the sherds, representing all surface treatments, exhibit indications of overlapping coil construction. The paste of these sherds ranges in color between 10YR 3/1 very dark gray and 10YR 4/2 dark grayish brown, and the paste contains abundant biotite in addition to white and gray feldspars and quartz. It is likely that all of these sherds represent vessels made from clay derived from a single source (Hill 2004a).
Figure 25. Rim sherds from EU-1 in AC-3. The image has been lightened to accentuate detail.
AC-5

A total of four sherds, including two rim sherds, was found in a small cluster in between the roots of a burned ponderosa pine just west of AC-4. These sherds all refit into one large rim sherd (Figure 27). This rim sherd represents a different vessel than those found in AC-4. This rim is everted and the lip was folded over to the exterior while the paste was still plastic to form a slight band at the lip, similar to one of the rim sherds from AC-1. The lip of this sherd is also beveled, and the top and exterior of these bevels display luster. This luster is most apparent on the right side of the lip as viewed from the exterior (Figure 28). Evident on these bevels are slight bands parallel to the lip that are thought to be marks from the tool used to polish the rim and form the bevels (Figure 28b). Luster and tool marks of the sort observed on this sherd are usually the result of polishing either while the paste is leather hard or after the surface of a dry vessel is moistened and rubbed with a smooth stone, bone tool, hardwood tool or large seed (Sheppard 1976:66-67). Since it appears that the bevels were in part formed as part of the polishing process (or vice versa), the clay was apparently leather-hard. The paste of this sherd is a uniform 10YR3/1, very dark gray, and the paste contains abundant biotite along with white, gray and pink feldspar and quartz (Hill 2004a).
Discussion

Despite differences in the late production stages and surface treatment of the vessels of AC-1, FS-33, AC-4 and AC-5, the seven to ten vessels represented in the ceramic assemblage at Eureka Ridge have many similarities. This suggests that they represent a single ceramic tradition. Most of the sherds are relatively thin and rim morphologies are similar. Constituents in the clay used to manufacture the AC-1, FS-33, AC-4 and AC-5 vessels are similar, and the paste from all of these vessels contains various proportions of biotite. Most of the temper is derived from highly weathered granite (grus), and contains biotite, white and pink feldspar, and quartz in various proportions. Slight differences in paste petrography between a sherd from AC-4 and the FS-33 vessel suggests that at least these two vessels were manufactured from different specific clay sources, although both are derived from weathered granite (Hill 2004b). Bedrock in the project area is Pikes Peak granite, which suggests that the clay used in the construction of the majority of the vessels found on site could have been found locally.

A wide variety of surface treatments are discernable from sherds with intact surfaces. The exterior of most of the vessels were scraped and smoothed, with a minority of sherds exhibiting cord marked and/or simple stamped surfaces that were subsequently partially smoothed. The paste of the sherds exhibiting cord impressions is laminated, and many of the larger pieces of temper are oriented parallel to the surface, both indicating finishing with paddle and anvil. Interior surfaces were more often scraped and smoothed, but indentations and other small irregularities may be anvil impressions that were not
smoothed. Possible cord-impressions were observed on sherds from AC-1 and AC-4, and the degree of obliteration of the impressions observed on the single impressed sherd from AC-4 may obscure an example of simple-stamping, a Plains-associated ceramic attribute not commonly reported from ceramics found in Colorado (Brunswig 1995; Ellwood 2002), but common on wares of the Central Plains, including Lovitt Simple Stamped (Gunnerson 1960; Hill and Metcalf 1941). What appear to be overlapping coils are visible in the edge of a cord impressed or simple stamped sherd from AC-4.

While the exterior surfaces of most of the vessels were smoothed while the paste was still plastic, the single rim sherd from AC-5 is the only vessel that exhibits evidence of polishing. The lip of this sherd is beveled, and these bevels show faint signs of faceting.
by a smooth tool (Figure 27b); probably the clay was leather hard. Although superficially the sherds from Eureka Ridge have morphological and technological similarities to Uncompaghre brown ware, attributed to the Ute (Buckles 1971), polishing is not a surface treatment used by the Ute (Reed 1995:123), but is, however, common on sherds and whole vessels of Lovitt Plain and Lovitt Simple Stamped (Gulley 2000; Gunnerson 1960; Hill and Metcalf 1941). Although somewhat rare, cord impressed Dismal River sherds have been found at undated surface scatters in eastern Colorado (Brunswig 1995; Gunnerson 1960).

The one exception to the above pattern is the AC-3 vessel. This vessel is the only one from Eureka Ridge that was not scraped and/or smoothed on either the exterior or interior surfaces, the only vessel with a decorated lip, and the only vessel not manufactured from clay derived from weathered granite. The sherds from this vessel are thicker on average than those from the other vessels, and the temper is noticeably coarser. Because it was the only vessel that was manufactured from clay derived from an indurated, poorly sorted sedimentary rock (Hill 2004b), it is the only vessel that could not have been made from local clays.

The similarity of the vessels found on site (except AC-3), and the equal distribution of different ceramic traits among the different areas of the site (cord impressed/simple stamped sherds and folded lip rims in AC-1 and AC-4 which are located at different ends of the site) suggests that not only was the site repeatedly occupied over time by groups that were ethnically related, but probably by groups within the same family lineage. The presence of the somewhat anomalous (but still culturally consistent) AC-3 vessel in Feature 2 may be explained by either a separate occupation by a different but still ethnically related group, acquisition of the vessel from a related group through trade, or by the presence of a potter with slightly different tradition that may have married into the Eureka Ridge band.

**Site Chronology**

Three Accelerator Mass Spectroscopy (AMS) dates are available from the Eureka Ridge site, all three from crushed ceramic sherds. All of these dates were calibrated using the shareware package CALIB 5.0 (Stuiver and Reimer 1993) that utilizes the IntCal04 dataset (Reimer et al. 2004). A date of 410 ± 30 BP (Beta 187965, 2-sigma cal range AD 1430-1620) was returned from a sherd from TU-1 in Artifact Concentration 4, a date of 460 ± 40 BP (Beta 187966, 2-sigma calibrated age range of A.D. 1400 - 1615) was returned from a sherd from Artifact Concentration 1, and a date of 305 ± 30 BP (University of Arizona AA60679, 2-sigma calibrated age range of A.D. 1490 – 1650) was returned from a sherd from Feature 2 (Table 7). Since there is a possibility that the clay used to manufacture ceramics could contain carbon inherited from the clay source, which could result in a date older than those on plants or charcoal from the same occupation. This could result in a date that reflects carbon that predates the manufacture or use of the vessel, thus AMS dates on crushed sherds have the potential to return dates older than the actual age of the occupation. However, these dates are all consistent with dates from other High Country Dismal River sites, which suggests that they are dating the actual occupations at Eureka Ridge and not inherited carbon.
Table 7. AMS dates from the Eureka Ridge site.

<table>
<thead>
<tr>
<th>FS #</th>
<th>Lab #</th>
<th>Material</th>
<th>¹⁴C Age</th>
<th>2-sigma range*</th>
<th>¹³C/¹²C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>Beta 187965</td>
<td>Crushed sherd</td>
<td>410 ± 30 BP</td>
<td>AD 1430-1620</td>
<td>-22.1</td>
</tr>
<tr>
<td>69</td>
<td>Beta 187966</td>
<td>Crushed sherd</td>
<td>460 ± 40 BP</td>
<td>AD 1400-1615</td>
<td>-21.4</td>
</tr>
<tr>
<td>551</td>
<td>AA-60679</td>
<td>Crushed sherd</td>
<td>305 ± 30 BP</td>
<td>AD 1490-1650</td>
<td>-23.6</td>
</tr>
</tbody>
</table>

*All C¹⁴ dates calibrated using CALIB version 5.0 (Stuiver and Reimer 1993) using the Intcal05 data set (Reimer et. al. 2004)

The date on the sherd from Feature 2 (AC-3) was dated by the University of Arizona AMS laboratory. For this sample, a method utilizing a low temperature combustion technique was used to minimize the effect of clay-bound carbon (O'Malley et al. 1999). The idea behind this technique is to combust the organic carbon at a temperature (400 C) which is too low to release clay-bound carbon. Samples with a higher carbon percentage after pretreatment at 400 C are likely to be less affected by inherited carbon than samples with lower percentages (George Burr, personal communication 2004). No methods specific to dating sherds were used for the Beta Analytic dates (Darden Hood personal communication 2005).

The dates from Eureka Ridge represent at least two occupations of the site. There is no statistically significant difference between the 410 ± 30 BP and 460 ± 40 BP dates at the 95% confidence level ( \( t=1.00, X^2=3.84, df=1 \) ), which suggests they either date the same occupation or two occupations very close in time. The group of three dates (including the 305 ± 30 BP date) are significantly different at the 95% confidence level ( \( t=11.25, X^2=5.99, df=2 \) ). This suggests that there was a relatively long tradition of use of the site by the same group or lineage over a relatively long period of time, perhaps several generations. The probability distribution curves of the calibrated dates (Figure 29) suggest that the earlier occupation occurred during the latter part of the Middle Ceramic period, whereas the later component dates to the earliest part of the Protohistoric period.
DISCUSSION AND CONCLUSIONS

The Eureka Ridge site represents one of the most, if not the most, extensive assemblages of Late Precontact period artifacts in eastern Colorado. Perhaps the most remarkable aspect of this site (besides the quantity of ceramic artifacts) is the unremarkable nature of its location. There are no obvious features of this location that would make it more attractive than other topographically similar locations – hence our surprise at finding such an extensive site in this particular spot; hence the name, “Eureka Ridge.” Aside from a commanding view of Pikes Peak and nearby Signal Butte (Figure 29), the ridge on which the site is situated is similar to dozens of ridges that had been surveyed in the project area prior to discovery of the site, and similar to perhaps hundreds of ridges that were surveyed subsequent to its discovery. There are no obvious resources in the area and, currently, no surface water flows in Little Turkey Creek below the site to the north, although a wet meadow in the valley indicates the existence of ground water close to the surface. Water was no doubt available from this wetland by digging a shallow well, and perhaps Little Turkey Creek flowed on the surface during the occupation of the site. As noted above, several species of plants that produce starchy tubers currently grow in this wetland. However, this does not explain the lack of sites on similar ridges in the project area that overlook permanent streams which also would have provided access to resources known to have been utilized prehistorically. Perhaps the criteria used to select this site location are not immediately apparent to the modern eye. In general, the cultural material is diverse enough to suggest that the site is a camp that was occupied at least twice and probably many times during the 15th and 16th century, which suggests that this location was one of great importance to this particular group or lineage, and the tradition of use of this place spanned several generations. The presence of Feature 2, interpreted as a hide tepee confirms the site’s status as a camp. But what brought these people here
to this particular place at this particular time? During the last 1500 years many hunter-
gatherers made and used ceramics, but compared to the flaked stone artifacts used by 
these people they are relatively rare. So, the unprecedented number of ceramic vessels 
(7-10) represented by the 487 sherds found in five separate concentrations suggests that 
ceramic vessels were a vital part of the activities at Eureka Ridge. The presence of so 
many ceramic vessels on site suggests that cooking or some other processing was a major 
site activity, although there is little indication of fire features beyond the somewhat 
unimpressive presence of Features 1 and 3.

Photograph Redacted at Request of OAHP

Figure 30. View of Pikes Peak (right) and Signal Butte, looking southeast from the Eureka Ridge 
site.

Ceramics are often associated with the cooking and processing of vegetal foods. The 
ponderosa pine-Douglas fir-aspen forest is not particularly rich in economic plant 
resources, but a number of economic plants that provide nutritious roots such as salsify, 
sego lily, thistle and nodding onion would have been available on the slopes of the ridge 
and in the wetland below the site. There are five pieces of ground stone located in two 
loci (AC-4 and in the middle of the site), one of which is a polished river cobble that may 
have been used primarily for hide processing rather than as a grinding tool. However, the 
presence of four pieces of ground stone seems insufficient to make a strong case for 
acquisition and processing of plants to be the primary function of the site, despite the 
presence of the ceramics. What limited ground stone is present may have been used in 
conjunction with the ceramics to produce pemmican; the ground stone would have been 
used to grind dried meat and the ceramic vessels to boil bone for grease production.
The site is well situated for a hunting camp – it is above and down wind from the meadow, which provides excellent graze and water for game. There are indications of game processing in the site assemblage; formal end scrapers (n=12) and other unifacially retouched flakes (n=13) represent 57% of the retouched pieces in the assemblage and suggest that hide processing was a major activity. Small pieces of bone recovered from Feature 3 excavations are fragments of large mammal rib and long bone, some exhibiting possible cut marks, suggesting that at least some animals were butchered on site and processed for bone grease. The debitage assemblage is also consistent with a hunting camp. The predominance of small flakes, primarily biface thinning and retouch flakes, indicates the major lithic reduction activities were tool rejuvenation and biface manufacture, with a single episode of core reduction represented by a concentration of larger Dawson petrified wood core flakes (AC-8). If the ceramic vessels were used to boil bone fragments to render bone grease, there might be little other evidence for this activity; the shallow site sediments and the acidic nature of soils under conifer forests would not preserve the fragments of bone that are the product of bone boiling, and the use of ceramics at Eureka Ridge would mean that the large concentrations of fire-cracked rock usually associated with stone boiling in aceramic components would not be present (although note Feature 1). Flakes recovered from the interior of Feature 3 exhibited dirt adhered with grease, supporting use of this feature for bone processing.

However, if processing plant resources or rendering bone grease was the primary site activity and ceramics were being used for this purpose, one might expect a few more indications supporting these activities. In addition to the previously mentioned ephemeral nature of Features 1 and 3, there were either few (Feature 1) or no (Feature 3) sherds associated with them, which seems unusual considering the number of broken vessels found elsewhere on site and their presumed use for cooking. The paste and temper of all but one of these vessels suggests that they were made from local clays which, given the number of vessels found on site and the difficulty inherent with the transport of relatively fragile ceramics, suggests that they were manufactured specifically for use at Eureka Ridge. Future residue analysis on the sherds could answer the question of what the primary processing activity was.

The wide variety of lithic raw material types present at Eureka Ridge suggests that a highly mobile group occupied the site. These people were obviously familiar with most of the major mountains and Plains lithic sources, and apparently also had wide-ranging social contacts and trade relationships with other groups to the south in New Mexico and possibly the Texas panhandle (Figure 21). The preponderance of sources represented in the flaked lithic assemblage at Eureka Ridge are from either the foothills/Plains transition zone or from the mountains, suggesting an up/down settlement round east-west between the Palmer Divide and South Park and north-south between Middle and South Parks. Raw material noticeably absent from the lithic assemblage are Denver formation petrified wood and Flattop chalcedony located in the extreme northeastern corner of Colorado. This absence indicates that travel was restricted to south of the Denver Basin and west of the Piedmont. The flaked lithic assemblage for the most part reflects conservation of material due to the lack of high quality local sources. This is especially notable in the end scraper assemblage (Type 1 Modified Flakes) wherein formalhafted end scrapers were repeatedly retouched while hafted.
Determining the season of occupation is difficult given the data available. What little data is available suggests that the site was occupied during the late summer/early fall. Feature 2 does not have an internal hearth, which is not uncommon for small, temporary structures (Scott 1988). At an altitude of 8,880 ft the lack of an internal hearth implies a warm season occupation – in fact, any occupation at this altitude with a dearth of fire features or more substantial habitation structures suggests warm season occupation (Sanfillippo 1998; Shields 1998). If the abundant ceramics represent bone grease production, then that may imply a fall occupation, as bone grease is usually a product used to store and preserve food as pemmican for cold season consumption. Although these two interpretations might seem at odds with each other, there are at least two ways to reconcile them. The simplest explanation may be that Feature 2 is associated with a warm season occupation, and the majority of the ceramics (except for the AC-3 vessel) are associated with unrelated fall occupations of the site. However, it seems unlikely that a relatively isolated and superficially unremarkable location like Eureka Ridge would have been occupied for different reasons during different seasons. A better explanation for multiple occupations at Eureka Ridge is that the site was used for a specific purpose during the same time of year, by the same family lineage. Perhaps the simplest explanation is a late summer/early fall occupation while the weather was still warm, but close enough to the cold season to begin preparing for winter prior to a return to lower climes east of the Front Range.

There is some justification that the ethnic affiliation of the residents of Eureka Ridge can be reasonably determined. Gulley (2000) has rightfully questioned the simplistic equation of linking Dismal River Aspect sites with proto-Apachean people that has permeated discussions of Dismal River since the publication of An Introduction to Plains Apache Archaeology: The Dismal River Aspect (Gunnerson 1960). Gulley maintains that the Dismal River culture-historical construct has not been refined from its original definition, so attributing plain ware ceramics on the Plains with a Dismal River affiliation with little or no additional evidence to support this conclusion is unfounded. In addition, Gulley believes that there is insufficient evidence (ethnohistoric or archaeological) to allow for an ethnic attribution to the Dismal River Aspect, even if there were a well defined archaeological construct.

Although we agree with Gulley’s assertion that the Dismal River Aspect may actually represent a generalized Plains lifeway, we take exception to her assertion that “Dismal River does not represent sites left by semi-nomadic Plains Apache, and that any cultural designation for the complex seems premature” (Gulley 2000:153, emphasis added). This conclusion is based not only on what she perceives as a lack of definition of the concept of “Dismal River,” but also on the lack of well-excavated and dated Dismal River sites and the absence of sites representing Dismal River precursors. A growing body of evidence that has accumulated since she wrote her thesis suggests that at least some Dismal River sites may in fact represent proto-Apache occupation of the high country of Colorado. Complete rejection of Dismal River as representing the archaeological manifestation of proto-Apaches begs the question: If the Dismal River Aspect (or a portion thereof) does not represent proto-Apache occupation of the mountains and Plains, then where is the archaeological evidence for the demonstrated migration of the southern Athapaskans? It may reside in some yet undiscovered archaeological complex, but that
seems unlikely. As the current interpretation of Occam’s Razor suggests, when giving explanatory reasons for something, do not posit more than is necessary. It is far more likely that evidence of the southern Athapaskan migration exists in sites already documented or excavated, but its significance has not been recognized.

The entry of Athapaskans into the Southwest is one of the few undeniable facts of American archaeology (Wilcox 1981:213). The fact that viable routes are located through the High Plains, along the Plains margin, down the Front Range or through the intermontane Parks (see Schlesier 1994 for a discussion) suggests that evidence of this migration is located somewhere in Colorado. The evidence from Eureka Ridge and the other documented high country sites containing Lovitt-like ceramics (among other similarities in material culture) dating to the 15th and 16th centuries suggests that without a viable alternative, the Western Dismal River Aspect is the best candidate for an archaeological manifestation representing the proto-Apache. The growing number of Dismal River sites along Colorado’s Front Range are located in the right place and occur at the right time to represent early occupation of Colorado by Athapaskans, if not the actual migration (Larmore and Gilmore 2004). The discussion, however, must turn to whether Eureka Ridge and other recently discovered sites with early Athapaskan ceramic technology are in fact related to what has become known as the Dismal River Aspect. Is Eureka Ridge a proto-Dismal River Aspect precursor or something else entirely, as yet undefined?

That the northern proto-Athapaskans were originally an interior, mountain oriented people there is little doubt (Schlesier 1994:328), and it therefore makes sense that these people would continue to utilize environments that they were adapted to during migration south. In the far northern homeland of the Athapaskans, these environments (the boreal forest and tundra) are determined by latitude. During the journey south, these people would have moved through a successive number of biomes, whose distribution was controlled by altitude. The elevational separation of biomes serves to increase the proximity of diverse plant and animal communities, and people migrating along the mountain front would have easy access to many familiar resources in several environmental zones on both a seasonal and potentially daily basis. This is why we favor combining the mountain and Plains margin migration routes into a single adaptation. A Plains margin route modified by seasonal utilization of mountain environments is suggested by the evidence from Eureka Ridge and the other high country sites, and occupations at contemporary lower elevation sites such as Petsch Springs and Franktown Cave, which may represent the occupation of the Plains in this scenario (Figure 31). Evidence of strong connections between the occupants of Eureka Ridge and contemporary groups living on the Plains is found in the similarities between the ceramics and those of the Plains groups, including surface treatments (simple stamping and cord marking) and the diagonal impressions on the rims of the later AC-3 vessel resembles those of “classic” Lovitt ceramics. Also the presence of a possible tepee instead of a wikiup or conical timber lodge also implies stronger connections to the east versus the west.

The proto-Apache (as represented by the High Country Dismal River sites) were obviously in Colorado by the early 15th century, and the number of lithic sources represented by the Eureka Ridge assemblage indicate that the occupants had an intimate
knowledge of the resources available in a large geographical area, and were at least in contact with groups to the south if not actually moving back and forth between Colorado and northern New Mexico and the Texas panhandle. The sherd AMS dates also indicate a long period of time where the site was visited repeatedly over several generations. This evidence demonstrates that the occupants of Eureka Ridge were relatively long-term residents of the region and not recent émigrés. This reinforces the point that the movement of these people from north to south was not necessary a “migration” per se as much as it was an incremental expansion of population into progressively more southern territories over time. The proto-Apache occupants of Eureka Ridge were familiar with the area, which means that they were probably in the area even earlier than the 15th century dates obtained from Eureka Ridge and the other high country sites suggest, and so it seems reasonable to surmise that these people had been in Colorado as early as the beginning or middle 14th century. Even a relatively slow rate of expansion would place proto-Apacheans in the Southwest and southern Plains by the early 16th century, which is when they become visible in the archaeological record (Figure 32). Although the mid 16th century presence of an already established Navajo cultural pattern in north central New Mexico suggests that an even earlier arrival is reasonable (Wilshusen and Towner 1999).

The rapidly expanding suite of Dismal River sites in the high country of the Front Range pre-date the Dismal River sites in Nebraska and Kansas by more than 200 years. This
suggests an additional hypothesis. The ceramics from Eureka Ridge suggest affinity with the Lovitt ceramics in technology, surface treatment, and decoration, and yet they predate the dated Eastern Dismal River occupation of the Central Plains by as much as 250 years. We tentatively suggest that the people that occupied the high country sites within Colorado’s Front Range (Western Dismal River Aspect) were the ancestors of the occupants of the Eastern Dismal River sites in Kansas and Nebraska, and these latter sites represent people that expanded from eastern Colorado out onto the Plains and adopted a semi-sedentary agricultural life way, bringing their unique Plains-Puebloan influenced ceramics with them out onto the Plains (Figure 33). What then was the impetus for these early Apacheans to abandon the Plains margin along the Front Range and settle on the western edge of the High Plains? We propose that Ute and Shoshone expansion into Colorado as part of the general Numic expansion (Madsen and Rhode 1994) would have placed pressure on what are presumed to have been highly nomadic Apachean groups occupying a region whose pre-Athapaskan population had decreased dramatically due to the onset of the Pacific climatic episode. Shoshone presence is indicated by Graeber Cave (Nelson and Graeber 1984), located a short-distance up Turkey Creek and in the Front Range of Colorado west of Denver. A vessel at Graeber Cave represented by 21 rim sherds and described as Intermountain Ware returned a date of 640 ± 74 (2-sigma cal. range A.D. 1270-1436) which overlaps the dates from Eureka Ridge. Numic presence on the Plains of central Colorado is represented by two sites in Arapahoe County. A partial punctate vessel from 5AH417 returned a thermoluminescence date of A.D. 1525 ± 90 (Joyner 1989), and 5AH15, a site in eastern Arapahoe County contained small plain ware sherds similar to Numic ceramics was dated to 470 ± 70 (2-sigma cal. range A.D. 1310-
This evidence suggests that the Ute and Shoshone were present in the Front Range and expanding out onto the Plains by the 16th century, which may have been a factor in the movement of Western Dismal River people out onto the Central Plains. Environmental changes may also have contributed to this movement.

Amelioration of the Pacific paleoclimatic episode by A.D. 1500 would have gradually allowed semi-sedentary groups back into the region setting the stage for Apachean migration eastward onto the High Plains. The amalgamation of Dismal River ceramic and lithic technology recognized by Gunnerson (1960; 1987) and others (e.g., Gulley 2000; Brunswig 1995) supports interaction (solicited or not) between Numic (Shoshone Intermountain Ware) and Athapaskan groups. Perhaps not coincidentally, the Central Plains were affected by drought until circa A.D. 1450-1500, which may have begun or accelerated a period of frequent interaction and displacement across the Central Plains (Steinacher and Carlson 1998; Wedel 1986; Gunnerson 1987) that persisted into the Protohistoric or Late Ceramic period (Gunnerson 1987). The result is a blend of ceramic technology and style that reflects close interaction among groups (i.e., White Rock, Great Bend, and Lower Loup Aspects) proposed to have become distinct tribes of the historic record (Siouan, Wichita, and Pawnee, respectively). Material culture fusion is what may have complicated clear definition of the Dismal River Aspect following the early investigations in Kansas and Nebraska. This scenario supports Gulley’s (2000) assertion that Dismal River represents a generalized Plains lifeway; however, it should be clear that what is termed Western Dismal River Aspect is less complicated archaeologically, presumably by more limited interaction along Colorado’s Front Range and preceding their expansion eastward onto the Central High Plains. It is unknown what happened to Eastern Dismal River populations subsequent to the mid 18th century, but Gunnerson
(1974) suggests that many of these people may have merged with Jicarilla to become the Llanero band ca. A.D 1730, and Gunnerson and Gunnerson (1971) suggest that northern populations of the Eastern Dismal River people may have become the Kiowa-Apache (Figure 34). Whatever became of the Eastern Dismal River people, they ceased to exist as a distinctive archaeological manifestation on the Central Plains by 1750, possibly due to displacement by larger and better organized groups such as the Pawnee or Comanche that moved into the area about this time (Gunnerson 1974, Gunnerson 1987).

Figure 34. Hypothesized 18th century abandonment of the Central Plains by Eastern Dismal River populations and subsequent movement and incorporation into other Apachean groups.
Site Assessment

Assessment of Eureka Ridge was two-fold: 1) to evaluate the site for eligibility for nomination to the National Register of Historic Places (NRHP) and 2) to evaluate the potential effect of post-fire erosional processes on the site’s current and future integrity given its eligibility for nomination to the NRHP. Based on the important information that the site has provided to the discussion of Athapaskan migration and the adaptations of these people as they inhabited Colorado, in addition to the fact that significant buried cultural material is still present despite the shallow soil of the locality, the site is recommended eligible for nomination to the NRHP.

Although soil development is shallow, it has been demonstrated that shallow soils do not preclude the presence of significant buried cultural deposits. Careful excavation and point plotting of artifacts was necessary to establish subsurface patterns and to recognize ephemeral features given the context of the site’s discovery (subsurface oxidation to ~3 cm below ground surface). It is our contention that additional areas of Eureka Ridge contain intact, significant cultural deposits worthy of future investigation. For example, the ceramic concentration designated FS-33 remains to be tested, and given the results of the excavation of EU-1 over AC-3, AC-1 and AC-4 may contain structures similar to Feature 2. Not only does this conclusion affect the eligibility of Eureka Ridge, but it also has implications for other sites in the mountains that have previously been evaluated as having little potential for providing additional information. Careful excavation of other shallow sites could potentially provide evidence of features similar to Feature 2.

As of this writing, it is almost three years since the Hayman fire swept across Eureka Ridge. Since the site’s initial discovery in July of 2003 there is no evidence that significant erosion of the cultural sediments has taken place despite the lack of surface vegetation. The stability of Eureka Ridge is likely due to the well-drained Sphinx soils that blanket the site. Therefore it is our contention that Eureka Ridge is presently in no danger of erosion that would compromise the integrity of the site. Interestingly enough, had Eureka Ridge not burned, in all probability the site would not have been found during survey due to thick duff covering the ground surface.
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