Section 1

Athapaskan Migration in Western North America
Until now, evidence of the early Apache in the southern Southwest has evaded identification archaeologically, just as this group avoided contact with the early Spaniards. Examination of collections, review of the pan-regional literature, preparation of behavioral models, and focused fieldwork in portions of the southern Southwest (New Mexico, West Texas, and Arizona) have led to the definition of the Cerro Rojo Complex, the Gileño Complex, the Pecos Complex, and the Cerro Alto Complex. These complexes each include a flaked-stone assemblage, architecture, and ceramics that are distinctive from the prehistoric pattern, from other contemporary Protohistoric manifestations, and from each other. Dates indicate a presence from at least the fifteenth century, and other data suggest they were present earlier. Small single-component sites provide verification of the associations and large multi-cultural sites with nearly 300 features provide a suite of corroborative data.

My research focuses on the early Apache in the southern Southwest: the ancestral Chiricahua and Mescalero. Although many participants at this conference have focused on the better-known Navajo, Western Apache, and Plains Apache as data points, this paper does not deal with these latter groups. There are substantial archaeological differences between these groups that may have implications for the timing and directionality of the migration(s).

Certain aspects of this recent research are of particular relevance to this conference. These include: (1) the early dates for Apachean presence in the southern Southwest, (2) the correlation of dates to a series of material culture assemblages, (3) contributions to the “empty niche” issue and the impact of the Apache on prehistoric populations, (4) distinctions between the Early Apache and contemporaneous non-Athabascan nomads, (5) the composite nature the assemblages in the Kluckhohn and Leighton (1962) sense, and (6) evidence for an early adherence to the typical Apache settlement pattern.

Archaeological Distinctions between Apache and other Nomads

Work is being undertaken from Hobbs/Pecos to the Tucson area, essentially throughout the entire southern Southwest (Figure 1). We have recorded dozens of sites and there are many more that have been located but have yet to be recorded. Athabascan and non-Athabascan sites are being documented and analyzed at the same time, allowing distinctions to be made between the numerous nomadic groups that occupied the southern Southwest in the Protohistoric/Early Historic periods.
Figure 1. Geographic Overview of Study Area.

Work has included systematic examination of museum and amateur collections, extensive systematic and focused field searches, and assessment of comparative literature from surrounding areas. We also used anthropological theory and ethnohistoric information as a basis for devising behavioral models that in turn were used to define assemblages and site distributional patterns. The goal has been to identify the basic material culture attributes and to devise mental templates for their recognition. Prior to this study, no evidence of Protohistoric or early Apachean evidence had been definitively identified in the southern Southwest.

As a result of this multi-year thematic study we have defined two general Protohistoric/Early Historic manifestations in the southern Southwest: One is inferred to be Apache and is represented by three complexes; the other relates to the contemporaneous nomads (non-Athabascan hunter-gatherers) (see Seymour 2002a, 2002b, 2003a, 2003b, 2003c, 2003d). The series of Apache assemblages, from west to east, include the Gileño Complex, Cerro Rojo Complex, and Pecos Complex. Owing to time restrictions, only the Cerro Rojo complex will be discussed here.

The Cerro Rojo Complex

The Cerro Rojo complex occurs in the El Paso area (Figure 2) and is the best known of these three Apachean complexes with dozens of sites known, including single component and multiple component sites. It is not a micro-blade technology and it is not Plains-like (as Plains assemblages are currently defined).
The Apache affiliation of the Cerro Rojo Complex is based upon several lines of evidence:

(1) Flaked-stone assemblages were analyzed on El Paso/Las Cruces area sites producing late dates, with comparisons being made across assemblages. Numerous sites were visited and collections examined that dated to the target period. This led to the identification of a series of tool forms and assemblage attributes that differed from those of the preceding Jornada Mogollon, Archaic, and Paleoindian assemblages.

(2) At the same time flaked-stone assemblages were examined on late nineteenth century tipi ring sites located near the Mescalero Reservation. These sites also contained native-made artifacts on European materials. This allowed the assignment of a relative date to the materials. It also allowed comparisons to be made between tool forms made on glass and those made on stone. Consistencies in tool morphology made on different material types, in different sectors of the southern Southwest, and though time allowed definitive conclusions to be drawn about the technological organization and stylistic and functional nature of the assemblage.

(3) The distinctive tool forms were then compared to assemblages obtained from known Apache sites in other areas, including Dismal River Aspect sites described by Gunnerson (1960) from Nebraska, to Tierra Blanca assemblages from West Texas thought to be Apache (Hughes 1978, 1989; Spielmann 1982), and Lipan assemblages from the 18th century mission site of San Lorenzo de la Santa Cruz in south-central Texas known to be Apache (Tunnell and Newcomb 1969). It is also similar to historic period Apache
assemblages in southern Arizona, including one documented to be the Cochise-Howard Treaty Site (Seymour and Robertson 2003).

These similarities allowed assignment of a tentative cultural affiliation, but only after the distinctiveness of the assemblage itself was recognized based upon a process of analysis and elimination with respect to other (earlier and contemporaneous) flaked-stone assemblages in the El Paso and southern Arizona areas.

As a consequence of several years of work flaked stone, ceramics, groundstone, architecture, and other features define these complexes. Figure 3 illustrates some of the newly defined plainware pottery types made or used by the Apache. The upper two rows represent new pottery types from the El Paso/Las Cruces area. Valle Bajo is a mission-made ware produced in the riverside Rio Grande Tigua, Piro, and Tompiro settlements starting in 1680 (Pueblo Revolt). A ware possibly made by the Piro pueblos further north was also found on one site. Rustler Plain is a probable Chiricahua Apache type found in southeastern Arizona. Other types that are not shown here have since been identified as well. Clearly, plainware studies are desperately needed.

![Figure 3. Protohistoric/Historic Plainwares.](image)

It is important to note that the Cerro Rojo assemblage (and the other Athabascan assemblages in the southern Southwest) is not bison specialized. Variations in artifact styles across space account for the distinctions between the three Apache complexes but their commonalities and their similarity in architecture imply a connection.
Architecture

A set of consistently occurring structural feature types occurs throughout this entire area. Figure 4 shows the eight types (including rock shelters) that have been found in association with Cerro Rojo Complex artifacts. It is important to point out that tipi rings do not occur until late in the southern Southwest, perhaps in the latter half of the nineteenth century. One reason for this is that plain light-colored hide-covered conical tipis would have been visible for miles in the mountains. Use of less visible materials was not only less costly (large hides were expensive) but allowed for a greater degree of concealment and camouflage. (This has implications for use of the term for “tipi” in linguistic word-lists for ascertaining timing of the migration; see Ives, this conference.) Moreover, as manifest in the southern Southwest, the Apachean complexes are not reflective of a Plains adaptation per se, but the artifacts have affinities to certain Apachean groups found on the Plains.

Figure 4. Architectural Types Found on Apachean Sites.

Canutillo Complex

The second distinct group of people in the area at the time is represented by a Plains assemblage that is not Athabascan (Figure 5). This is similar to the southern Plains Toyah-phase materials, as well as the Cielo Complex, Infierno Phase, and Garza Complex materials (Runkles 1964; Johnson and others 1977; Dibble 1978; Ricklis 1992; Habicht-Mauche 1992; Mallouf 1985, 1986, 1987, 1990, 1992, 1995, 1999; Turpin 1982). This we refer to as the Canutillo Complex in the southern Southwest. This relates to the Manso, Suma, Jano, and Jocome, and probably is Jumano, as is discussed in detail elsewhere (Seymour 2003b, 2003d). Surprisingly, it consists of beveled knives, unique
perforators, and a blade-core technology—all Plains-like, and triangular, basally notched projectile points. This highly distinctive assemblage is found from Ventana Cave on the Papagueria to the west of Tucson, to the El Paso area in southwest Texas and then further east onto the Plains.

Figure 5. Canutillo Complex Flaked-stone Assemblage.

Having defined this other contemporaneous assemblage and its variations it is possible to clarify the distinctiveness of the material culture related to these groups as opposed to the Apache. Several groups were known to have lived or traveled through the southern Southwest so in an effort to define one, “all” must be accounted for, lest questions of cultural association remain.

Canutillo Complex Adaptation

A Canutillo Complex tool found in association with bison bones in the San Simon Valley of southeastern Arizona has just been radiocarbon dated to Cal A.D. 1440 to 1530 (Cal BP 510 to 420) AND Cal AD 1560 to 1630 (Cal BP 390 to 320) (Figure 6; tool on left is Canutillo Complex, those on right are Mimbres from another locus). This indicates, along with other evidence, that in fact, that Canutillo Complex groups were this far west and that they were exploiting bison—explaining the presence of this unique assemblage. Other dates obtained from materials in direct association with this assemblage demonstrate an A.D. 1400 to 1500 presence in southwestern New Mexico.
There is also evidence that Canutillo Complex people had a more diversified diet. Small bones of birds and rodents are present in abundance on sites. Canutillo Complex sites are also river- and playa-oriented, where they probably exploited shrimp, tadpoles, fish, and waterfowl.

The archaeological juxtaposition of these distinctive complexes (Canutillo and Cerro Rojo) suggests first that two culture groups were present in the Southern Southwest at about the same time. Moreover it suggests that each of these groups was archaeologically distinctive. In contrast to the opinion presented by Forbes (1957, 1959, 1960), some of the various nomadic groups noted by the Spaniards at initial contact (Manso, Suma, Jano, Jocome) were not likely Athabascan.

This also raises the issue as to whether the Querechos (buffalo eaters) referred to by Coronado (Winship 1990) were Athabascan. In fact, it is worth critical consideration that these might have been other bison-hunting non-Athabascan nomads, as such groups were referred to later by Ibarra (Mecham 1927). Yet, Athabascan-related assemblages and dates from the southern Plains indicate an early Apache presence there as well (see Hughes 1978, 1989; Habicht-Mauche 1992; Spielmann 1982), contemporaneous with that documented in the Southern Southwest.
Early Dates

As shown in the Appendix A table at the conclusion of this article, the earliest definitive dates so far relating to these Apachean complexes are in the A.D. 1300 to 1500 range. The earliest dates are those from sites that are the furthest south, from the Dragoon Mountains in southern Arizona (from resinous material, possibly agave or yucca residue, e.g., not “old wood”) and the Hueco Mountains and Hueco Bolson in southwest Texas (some of which are thermoluminesence dates on sherds). These dates are consistent with the dates obtained by Oakes (Oakes 1995; Oakes and Zamora 1999) from the Mogollon Mountains in western New Mexico (also quite far south and west) but hers have not been analyzed with respect to the nature of material culture assemblages.

The dates shown in this table have been correlated with the Cerro Rojo material culture assemblages (features and artifacts). The figure does not show those early dates that are simply assumed to be Apache but for which no material culture corroboration is available. This is important because numerous other non-Athabascan nomadic groups included the southern Southwest in their territory at this time, as did the holdouts of the sedentary agriculturalists. There are also contemporaneous dates in well-documented contexts for the Canutillo Complex at this same time.

These dates for Apache sites are consistent with dates from the Tierra Blanca Complex in West Texas (Table 1). While Habicht-Mauche (1992:251) suggests a date range of A.D. 1450 to 1650 for the Tierra Blanca Complex, the other dates summarized in her article suggest the complex may fall as early as the A.D. 1250/1350 timeframe. Interestingly, one of the dates (although not the earliest) collected by Spielmann (1982:287) is consistent with the early date obtained by Jelinek (1967) in the Middle Pecos drainage, A.D. 1380±60.

Table 1. Absolute Dates for the Tierra Blanca Complex (in the context of Cerro Rojo dates).

<table>
<thead>
<tr>
<th>EARLIEST DATES</th>
<th>IN WEST TEXAS AND IN THE SOUTHERN SOUTHWEST (ALL VERIFIED ASSOCIATED WITH APACHEAN ASSEMBLAGES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site No.</td>
</tr>
<tr>
<td>WEST TEXAS</td>
<td>WEST TEXAS</td>
</tr>
<tr>
<td>PECOS COMPLEX</td>
<td>Site P11, Middle Pecos</td>
</tr>
<tr>
<td>TIERRA BLANCA</td>
<td>(A 264)</td>
</tr>
<tr>
<td>TIERRA BLANCA</td>
<td>(A 264)</td>
</tr>
<tr>
<td>Site</td>
<td>Feature Code</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>TIERRA BLANCA</strong></td>
<td></td>
</tr>
<tr>
<td>(A 264)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>C.C.C.C. (A 251)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>C.C.C.C. (A 251)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td><strong>SOUTHERN SW</strong></td>
<td></td>
</tr>
<tr>
<td>SOUTHERN SW</td>
<td></td>
</tr>
<tr>
<td>C.C.C.C. (A 251)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>Tule Mouth (A 1299)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td><strong>SOUTHERN SW</strong></td>
<td></td>
</tr>
<tr>
<td>C.C.C.C. (A 251)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>Tule Mouth (A 1299)</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td><strong>CERRO ROJO</strong></td>
<td></td>
</tr>
<tr>
<td>FB 1640 F3</td>
<td>Beta-175192</td>
</tr>
<tr>
<td>LA 84424 F1</td>
<td>Beta-169609</td>
</tr>
<tr>
<td>LA 84424 F2</td>
<td>Beta-172175</td>
</tr>
<tr>
<td>FB 9609</td>
<td>TL: X1185</td>
</tr>
<tr>
<td>Oxl-1345</td>
<td>Surface Sherd, Llano Plain (Apache ware)</td>
</tr>
<tr>
<td>Dragoon 0, Southern Arizona</td>
<td>Beta-166882</td>
</tr>
<tr>
<td>FB 1640 F2</td>
<td>Beta-150525</td>
</tr>
<tr>
<td>LA 49340</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>LA 117165/16318</td>
<td>Beta-126400</td>
</tr>
<tr>
<td>FB 16278/16312</td>
<td>Beta-168982</td>
</tr>
<tr>
<td>LA 117125</td>
<td></td>
</tr>
<tr>
<td>LA 26779</td>
<td>Radiocarbon</td>
</tr>
</tbody>
</table>
The Protohistoric period in the southern Southwest happens in the Late Prehistoric period—something that Texas archaeologists have known for a while. This surely explains why the Protohistoric/Early Historic period has avoided detection in the southern Southwest. Researchers have been looking for evidence of the transition too late, and as a consequence they have been dismissing evidence of the process of change as it was occurring.

Some of the earliest dates have been obtained from features on multi-component sites that can be definitively associated with the Cerro Rojo Complex. Figure 7 shows the Cerro Rojo Site, one of the type-sites for this early Apache complex (that also has evidence of the Canutillo Complex). This site has nearly 300 features, 212 of which are structures. Dates from A.D. 1420 (1420 ± 80) through the early nineteenth century have been obtained by means of radiocarbon and thermoluminescence (Seymour 2002a, 2003b).

Figure 7. Cerro Rojo Site Plan Showing Its 275 Features.
The Empty Niche Issue and its Impact on Prehistoric Populations

Many have suggested that the southerly movement of the Apache was through unpopulated areas—that there was an empty niche. Prehistoric populations had fled, societies collapsed, and the previous mode of living was abolished. Yet, our data are indicating that one or both of these early Apachean or non-Athabascan nomadic groups had an impact on the local prehistoric populations. There were present at the same time as the resident settled populations.

Our earliest dates on clear single-component sites or from distinctive loci indicate a definite fifteenth century presence. It is statistically unlikely that we have obtained the earliest existing dates for the area. Nor is it reasonable to assume that evidence of the first to arrive will be so blatant and boldly evident. As will be discussed below, the complex is fully developed, adapted to the local environment/geography, and widespread at this time—a characteristic that would not be expected had the Apache just arrived.

Moreover, collaborative evidence from sites occupied by the sedentary agriculturalists indicates conflict and change during the thirteenth century. Many burned pueblos are dating to the A.D. 1270 through 1440 range, suggesting widespread catastrophic or ritual abandonment at this time (and perhaps earlier).

Some of these earlier thirteenth-century dates have been obtained from burned and refurbished adobe pueblos (Jornada Mogollon) with Cerro Rojo Complex artifacts and evidence of a continuation of occupation (Figure 8). This suggests that there was an overlap in occupation by the bearers of the Cerro Rojo and Canutillo assemblage, on the one hand, and the sedentary pueblo-dwellers, on the other. This overlap occurs not only in the geographic territory occupied, but also in the actual settlements themselves. Early dates from a refurbished adobe pueblo (FB 1640) with Apachean tools near El Paso indicate the Apache initially inhabited Jornada features, making them difficult to see. This occupation could have been as short-term as occupying the vanquished settlement following a skirmish. This pueblo at FB 1640 may have been abandoned and reoccupied, attacked and occupied, or the inhabitants may have co-resided, Apache with the Jornada Mogollon, perhaps during trade expeditions.
Small houses in shallow pits are the norm for Jornada groups not occupying adobe pueblos. This house type has also been found with Cerro Rojo Complex artifacts and somewhat early dates (A.D. 1430 to 1650) at FB 9835 near El Paso. This house type is not typically considered Apachean in this area and is not consistent with later house types. Again, it may represent the reoccupation of a Jornada structure by the Apache. I recognized that until more research is done and these concepts are more widely accepted the question will remain as to whether these examples provide evidence of a late Jornada Mogollon occupation or an early Cerro Rojo (Apache) or Canutillo (non-Athabascan nomads) complex occupation. To date, interpretations have settled on the continuance of a late Jornada occupation. Even if Jornada Mogollon groups are present in the fifteenth century, this is not inconsistent with the notion of an influx of new groups.

**Evidence of Conflict**

It is not likely that the Jornada woke up one day and fled the Chihuahuan Desert. Numerous adaptive mechanisms and proactive responses are visible in the record prior to the disappearance of this culture group. Given that the movement of (Protohistoric and Jornada) people was likely a process not an event, it is probable that evidence of the influx and out-movement of people occurred over time.

Several lines of evidence suggest conflict was raging at about A.D.1300 (Figure 9). As was noted, several adobe pueblos in the Jornada area (e.g., 12 Room House Ruin; FB 232, etc.) were abandoned at this time. Concurrently, populations in the Rio Grande Valley focused almost exclusively on riverine settings, shifting away from higher wetter
woodland settings (Stuart and Gauthier (1981:420), which perhaps became the focus of residence for nomadic populations. People aggregated into large 100- to 500-room pueblos and in southern New Mexico thick adobe-walled compounds are constructed. Throughout New Mexico many previously occupied areas were abandoned and region-wide population began to decline starting at about A.D. 1300 (Stuart and Gauthier (1981:421, 422). In the El Paso area people were aggregating in large pueblos and those who still resided in small adobe pueblos were clustering together near key resources, such as reliable playas. Upon hearing this argument, Meade Kemrer (personal communication to Deni Seymour, October 2003) has recently suggested the possibility that in the Jornada del Muerto three different groups (Jornada Mogollon, Mimbres, and Salado) may have moved their settlements together for mutual protection. This is at the same time (ca. A.D. 1340) that 127 people were killed, their bodies found on the plaza and around the town, at Paquimé, northern Chihuahua (Di Peso et al. 1974b:325, 337). Between A.D. 1200 and 1400 the Trincheras culture adaptation of hill top terraced villages began in the northern Sonoran Desert (Cornejo 1992:160).

Figure 9. Plan View of Twelve-Room House Ruin and a Possible Scenario for its Abandonment (arrow points found at the site).

Early Adherence to the Typical Apache Settlement Pattern

One reason we have been successful in finding sites is because we have devised effective behavioral models (see Seymour 1995; 2002a). These models have been developed using archaeological theory as well as ethnographic and ethnohistoric data. The first sites found were identified this way and sites continue to be found using these models.
It is of interest that the earliest dates are from the mountains, indicating an early mountain adaptation. This should not surprising given that a chain of mountains extends from Canada to the southern Southwest, probably providing a familiar highland corridor as groups moved south. This may prove to be supportive of the Mountain Corridor migration model—at least for the Mescalero and Chiricahua Apache. But while there seems to have been a Rocky Mountain corridor, some Apache groups were probably on the Plains at same time. Archeological data suggest a contemporaneous presence in both areas (at least in the thirteenth and fourteenth centuries). Historical records may also provide evidence of their presence; yet for now the question remains as to whether the raiding mentioned by Cabeza de Vaca in the 1530s is by Apachean groups or the other nomads (see Seymour 2002a).

The discovery of Apachean sites in mountainous and foothill settings in the fifteenth century indicates that these early Apachean groups were mountain oriented, probably from the beginning. Yet, even at this early time there is evidence of adherence to the summer/winter settlement pattern. The summer/winter settlement shift, hinted at in the later historic record, is apparent in the early archaeological record, with summer sites in the mountains and winter sites in the foothills and in valley bottoms along rivers. Sites are also located near prominences, a pattern that seems to be important for nomadic groups in general. This pattern continues in importance for the nineteenth century Apache who were trying to escape detection and capture and thus had to disperse quickly, but needed to regroup later at distinctive locations. Thus, by the fifteenth century ancestors of the Chiricahua and Mescalero Apache had already established a settlement pattern that was consistent with later practices. Evidence points to an early start at the Mountain Retreat adaptation (rather than the Plains adaptation; see Seymour 2002a).

These Apache had a mountain adaptation early on, and by A.D. 1400 to 1500 the pattern was already established. Because there are so many early dates emerging from this time period it is a reasonable conclusion that The Entrance into the area occurred earlier. All evidence points to there being many people in the southern Southwest by A.D. 1400, suggesting that this area had been a focus of in-migration for some time. The fact that there is such a great amount of evidence emerging from this early period around the 32nd parallel suggests that there was an even earlier initial entry/presence.

**Implications of Technological Organization**

With regard to technological organization, it is surprising that the initial or earliest Apache assemblage is more like those used by agriculturalists than hunter-gatherers. It is an interesting combination of expedient and “thrifty” (see Borden 1952:32; see Matson and Magne and Magne and Matson, this conference). The Mescalero and Chiricahua were supposedly not dependent upon agriculture, as were the Navajo and Jicarilla, so their flaked-stone assemblage might be expected to be more like the Archaic one. This is not the case. This explains why the assemblage is hard to see and has taken so long to recognize.
This more expedient flaked-stone assemblage suggests that through time the Apache melded their technology with that of the local groups with whom they came into contact. Intermarriage and intermixing and changes in adaptation (and the nature of resources hunted and collected) likely changed their basic tool forms and basic technological adaptations through time. This probably explains why a pan-regional Athabascan artifact assemblage has not been identified. Assemblage attributes present in the far north (such as the occurrence of tci-thos) were altered by the addition of traits from neighboring groups. This revised assemblage was then changed again and again as groups moved south, until the basic attributes that defined it in the icy tundra of the north were no longer present in the tool kits found in the hot arid deserts of the Southwest. It has long been known that mixing with other groups was a key southern Athabascan adaptation. Local groups were probably not eradicated nor did they step aside, but instead the Athabascans incorporated aspects of these groups into their own.

At a minimum the absence of the expected flaked-stone technological organization suggests once again that our models of technological organization are in need of revision. Perhaps this reconsideration might include a caveat that raiding, if occurring this early, was relatively similar to agriculture (as opposed to hunting and gathering) with respect to consequences for technological innovations.

**Intermixing of the Assemblages from These Various Groups Resulting in the Creation of a New Distinct Assemblage**

Changes in tool form and technological organization can be seen through time in the southern Southwest assemblages. Some of these changes result from the addition of new materials (glass and metal), while others result from the mixing of groups that initially had different adaptations and who possessed different technological organizations. One example, the Cerro Rojo Site, bears evidence of the co-habitation of various Apache groups and Canutillo Complex groups (Figure 10; Seymour 2002b). Changes in tool forms and a combining of technologies are visible through time on this site and others. This changed the local Apache assemblage, making it different from either of the earlier assemblages, and distinctive in its own right from those in other areas.
Figure 10. Canutillo Complex Locus at the Cerro Rojo Site.

In this vast expanse included in the southern Southwest, the earliest Apachean assemblages are the most similar to one another. As these early Apache groups combined with local groups (Plains nomads and settled villagers) variations occurred in the assemblage, such that it continually, though gradually, changed through time. These changes occurred on a sub-regional level, accounting for the later archaeological distinctiveness between Apachean groups. Now that the A.D. 1400 to 1500 (and later) assemblage has been identified, it is time to identify the nature of the even-earlier Apachean assemblage so that the earliest evidence of Athabascan entrance into this area can be discerned. Hints at what this assemblage may look like are beginning to emerge (Seymour 2004).

Conclusion

For the workshop that accompanied this conference, I brought not only projectile points but also tools of a variety of types. This is because there are a whole series of tool forms that characterize the Cerro Rojo Complex (and the other Apachean complexes). In order to define this distinctive complex it has been necessary to examine complete assemblages, looking atdebitage as well as a variety of tool forms (as well as features and site setting). Many of these tools occur in contexts where there are no projectile points, so the other aspects of the assemblage have been indispensable in identifying sites.

Projectile points have been important to the process as well. Our initial database of 1200 projectile points is continually growing, as we seek to differentiate the subtle stylistic differences in point types representing the various Protohistoric/Early Historic groups in the southern Southwest. For these, as well as the other tool forms and plainware
pottery, the devil is in the detail. The subtle stylistic differences are the key to differentiating the material culture assemblages of this time period.

The Cerro Rojo Complex and other Apachean complexes have been defined by combining early dates with a distinctive assemblage and feature set. Concurrent definition of the Canutillo Complex, and the assemblages of other Protohistoric/Early Historic groups known to have inhabited the geographic area now encompassed by the southern Southwest, has allowed distinctions to be made between these complexes. Comparison of known later Apache sites with the same or similar assemblages to those from the thirteenth and fourteenth centuries completes the historic/continuity connection. There are also consistencies in architectural styles through time and across space, which, when combined, support the inference that these complexes are Apache.

In contrast to the popular model of a Plains origin for Athabascans in the southern Southwest—suggested by the Gunnersons (D. Gunnerson 1956; Gunnerson and Gunnerson 1971), of which Wilcox (1981; also see Schaafsma 1995) is the major proponent—distinctive material culture sets and early dates are suggesting a concurrent or equally early presence in the mountainous west. While the Navajo and Jicarilla and other Athabascan groups may have had a Plains origin, archaeological evidence relating to the ancestors of the Mescalero and Chiricahua presents a different trajectory. The distinctiveness of the Apachean artifact and feature assemblage in the southern Southwest and the early dates indicate that Athabascan migration into this area must be reconsidered.

Acknowledgements. Much of this research has been supported by Fort Bliss, Directorate of Environment-ATZC-DOE-C.

References Cited

Borden, Charles  

Cornejo, Beatriz Braniff  

Dibble, David S.  

Di Peso, Charles C., John B. Rinaldo and Gloria J. Fenner
1974  *Casas Grandes: A Fallen Trading Center of the Gran Chichimeca.*

Forbes, Jack D.


Gunnerson, Dorothy A.

Gunnerson, James H.

Gunnerson, James H., and Dolores A. Gunnerson

Habicht-Mauche, Judith A.

Hughes, Jack T.


Jelinek, Arthur J.

Johnson, Eileen, Vance T. Holliday, Michael J. Kaczor, and Robert Stuckenrath

Kluckhohn, Clyde and Dorothea Leighton

Mallouf, Robert J.
1985 *A Synthesis of Eastern Trans-Pecos Prehistory*. Unpublished Master’s Thesis, on file at The University of Texas at Austin.

1986 *Prehistoric Cultures of the Northern Chihuahuan Desert*. Chihuahuan Desert-U.S. and Mexico, II, pp. 69-78. Office of the State Archaeologist, Austin, Texas.


Mecham, J. Lloyd

Oakes, Yvonne R.

Oakes, Yvonne R. and Dorothy A. Zamora
1999 Archaeology of the Mogollon Highlands: Settlement Systems and Adaptations. *Museum of New Mexico, Office of Archaeological Studies, Archaeology Notes* 232, Santa Fe. (See Volumes 1 and 2.)

Ricklis, Robert A.

Runkles, Frank A.

Schaafsma, Curtis

Seymour, Deni J.

2002a *Conquest and Concealment: After the El Paso Phase on Fort Bliss*. Manuscript submitted to Conservation Division, Directorate of Environment, Fort Bliss. Lone Mountain Report 525/528. This document can be obtained by contacting Sue.Sitton@emh10.bliss.army.mil.


2003c *Protohistoric and Early Historic Temporal Resolution*. Draft manuscript submitted to Conservation Division, Directorate of Environment, Fort Bliss. Lone Mountain Report 560-003. This document can be obtained by contacting Sue.Sitton@emh10.bliss.army.mil.

2003d *Additional Aspects of The Jumano Problem*, Ms in possession of the author.

2004 *People Fierce, Barbarous, and Untamed: Nomads of the Border Region*. Draft report submitted to Conservation Division, Directorate of Environment, Fort Bliss. Lone Mountain Report 560-005. This document can be obtained by contacting Sue.Sitton@emh10.bliss.army.mil.

Seymour, Deni J. and George Robertson

Spielmann, Katherine Ann

Stuart, David E. and Rory Gauthier
1981  Prehistoric New Mexico. Historic Preservation Division, Santa Fe.

Tunnell, Curtis D., and W.W. Newcomb, Jr.

Turpin, Solveig A.

Wilcox, David R.

Winship, George Parker, editor and translator
## Appendix A

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Material/Context</th>
<th>Calibrated Date (2 sigma)</th>
<th>Measured Radiocarbon Age</th>
<th>Conventional Radiocarbon Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Jornada Mogollon FB 232</td>
<td>Organic sediment; burned adobe pueblo; Catastrophic abandonment</td>
<td>Cal AD 1290 to 1440 (Cal BP 660 to 510)</td>
<td>430±60 BP</td>
<td>560±60 BP</td>
</tr>
<tr>
<td>Terminal Jornada Mogollon FB 6884 Room House Ruin</td>
<td>Maize from burned room; Catastrophic abandonment</td>
<td>Cal AD 1270 to 1400 (Cal BP 680 to 550)</td>
<td>390±40 BP</td>
<td>670±40 BP</td>
</tr>
<tr>
<td>Terminal Jornada Mogollon FB 1640</td>
<td>Archaeomagnetic date</td>
<td>AD 1200 to 1230, run by Brooks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERRO ROJO FB 1640 F3</td>
<td>Cal AD 1300 to 1430 (Cal BP 650 to 520)</td>
<td>340±4 BP</td>
<td>570±4 BP</td>
<td></td>
</tr>
<tr>
<td>CERRO ROJO AND CANUTILLO LA 84424 F1</td>
<td>Organic sediment, Thermal feature</td>
<td>Cal AD 1270 to 1400 (Cal BP 680 to 550)</td>
<td>610±4 BP</td>
<td>670±4 BP</td>
</tr>
<tr>
<td>CERRO ROJO AND CANUTILLO 84424 F2</td>
<td>Charred material, (mesquite and acacia), thermal feature</td>
<td>Cal AD 1400 to 1450 (Cal BP 550 to 500)</td>
<td>470±4 BP</td>
<td>500±4 BP</td>
</tr>
<tr>
<td>CERRO ROJO FB 9609 TL: X1185 OxL-1345</td>
<td>Surface Sherd, Llano Plain (Apache ware)</td>
<td>AD 1420±80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GILEÑO Dragoon 1, Southern Arizona</td>
<td>Charred material, Thermal feature, Gileño Complex</td>
<td>Cal AD 1430 to 1520 (Cal BP 520 to 430) AND Cal AD 1580 to 1630 (Cal BP 380 to 520)</td>
<td>380±4 BP</td>
<td>410±4 BP</td>
</tr>
<tr>
<td>CERRO ROJO FB 9609 TL</td>
<td>Surface Sherd, Llano Plain (Apache ware)</td>
<td>AD 1570±50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERRO ROJO FB 1640 F2</td>
<td>Adobe room with double adobe walls; unfurnished</td>
<td>Cal AD 1430 to 1650 (Cal BP 520 to 300)</td>
<td>370±6 BP</td>
<td>370±6 BP</td>
</tr>
<tr>
<td>CERRO ROJO FB 9835 F 2</td>
<td>Radiocarbon</td>
<td>Charred material</td>
<td>A.D. 1430 to 1650</td>
<td></td>
</tr>
<tr>
<td>CERRO ROJO 49340 LA</td>
<td>Radiocarbon</td>
<td>A.D. 1450 to 1645 (1590±650 BP or 1590±650), run by ASM-Ravesloot</td>
<td>360±650 BP</td>
<td></td>
</tr>
<tr>
<td>PROBABLE CERRO ROJO L17165/16318 FB</td>
<td>Wood (ocotillo)</td>
<td>A.D. 1450 to 1670, AND 1780 to 1795, AND 1945 to 1955, run by Baugh and Sechrist, Corrected date: 1440 AD (95.4%)</td>
<td>320±6 BP</td>
<td>320±6 BP</td>
</tr>
<tr>
<td>PROBABLE CERRO ROJO L17125 LA</td>
<td>Rock shelter 1 Horse bone: right ulna frag</td>
<td>Cal AD 1450 to 1659 (Cal BP 500 to 300)</td>
<td>290±4 BP</td>
<td>340±4 BP</td>
</tr>
<tr>
<td>PROBABLE CERRO ROJO</td>
<td>LA 117125</td>
<td>FB 16278</td>
<td>168983 Beta-16278 Radiocarbon</td>
<td>168983 Beta-16278 Radiocarbon</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>CERRO ROJO (Locus)</td>
<td>LA 26779</td>
<td>FB 9609</td>
<td>X1184 OxL-1344 Surface, Sherd, Piro ware</td>
<td>± 70</td>
</tr>
<tr>
<td>CERRO ROJO (Locus)</td>
<td>LA 26779</td>
<td>FB 9609</td>
<td>X1186 OxL-1346 Surface, Sherd, Valle Bajo</td>
<td>± 50</td>
</tr>
<tr>
<td>OAKES AND ZAMORA</td>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 37917</td>
<td>57450 Beta-37917 Area D</td>
<td>AD 1400-1950, Oakes and Zamora</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 37917</td>
<td>64061 Beta-37917 Area F</td>
<td>AD 1400-1530 AND 1550-1640, Oakes and Zamora</td>
<td>La 37917</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70188</td>
<td>6908 Beta-70188 Pithouse (27 cm)</td>
<td>AD 1520-1570 AND 1630-1950, Oakes and Zamora</td>
<td>La 70188</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70188</td>
<td>69811 Beta-70188 Far Area Fill</td>
<td>AD 1260-1490, Oakes and Zamora</td>
<td>La 70188</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70188</td>
<td>64066 Beta-70188 Pithouse (27 cm)</td>
<td>AD 1490-1950, Oakes and Zamora</td>
<td>La 70188</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70188</td>
<td>64067 Beta-70188 Pit 3</td>
<td>AD 1400-1470, Oakes and Zamora</td>
<td>La 70188</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70189</td>
<td>69815 Beta-70189 Roasting Pit (10-30 cm)</td>
<td>AD 1220-1430, Oakes and Zamora</td>
<td>La 70189</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70189</td>
<td>57459 Beta-70189 Roasting Pit (10-30 cm)</td>
<td>AD 1430-1680 AND 1770-1800 AND 1940-1950, Oakes and Zamora</td>
<td>La 70189</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 70189</td>
<td>64068 Beta-70189 Pit Structure (15-34 cm)</td>
<td>AD 1240-1440, Oakes and Zamora</td>
<td>La 70189</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 75791</td>
<td>57466 Beta-75791 Pithouse 1 (Level 3)</td>
<td>AD 1460-1680 and 1770-1800 and 1940-1950, Oakes and Zamora</td>
<td>La 75791</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 75791</td>
<td>57457 Beta-75791 Roasting Pit 2 (Level 2)</td>
<td>AD 1480-1880 AND 1910-1950, Oakes and Zamora</td>
<td>La 75791</td>
</tr>
<tr>
<td>POSSIBLE CERRO ROJO</td>
<td>LA 89846</td>
<td>93530 Beta-89846 Roasting Pit, Level 3</td>
<td>AD 1430-1645, Oakes and Zamora</td>
<td>La 89846</td>
</tr>
</tbody>
</table>
Most archaeologists consider the Avonlea complex (ca. A.D. 100-1200) the archaeological manifestation of prehistoric Athapaskan occupation of the northwestern Plains. The Navajo and Apache are descendants of Athapaskans that migrated from this area ca. A.D. 1100-1200 and arrived in the southern Plains and Southwest prior to A.D. 1550. The timing and impetus for this migration are incompletely understood, and there is little physical evidence south of Wyoming to indicate the route taken. However, evidence from the Bayou Gulch site in central Colorado suggests that some of these migrants passed through the western High Plains close to the foothills. Projectile points morphologically similar to Avonlea points and manufactured from local materials were recovered from stratigraphic contexts dated A.D. 1010-1420. Migration through the area at this time was probably uncontested; evidence suggests that population on the western High Plains was at a 1300 year low. This suggests a scenario in which Athabaskan migrants moved through the area between the 13th and 15th centuries relatively unimpeded by the large resident populations of previous centuries. A rapid migration of relatively small groups could help explain the paucity of physical evidence of pre-Dismal River Athapaskans between the northwestern Plains and the southern Plains and Southwest.

Introduction

The question of when and why the ancestors of the Athapaskan peoples of the Southwest and Southern Plains left their homeland in the north and what path these people took on their journey has long been debated by archaeologists working from the Arctic Circle to the deserts of southern Arizona and New Mexico. These questions have been the subject of entire volumes and conference symposia and still no definitive answers have been forthcoming.

The distinctive Avonlea points of the northern Plains have been thought to represent prehistoric Athapaskans moving south into this area from northern British Columbia and Alaska on the northern Plains, although there is some dissent on whether the Avonlea horizon can be attributed to Athapaskans alone or represents a multi-ethnic technology (Walde 2003, Reeves 2003). Regardless of whether Avonlea can be attributed to Athapaskans alone or ethnic groups ancestral to the Sioux and Blackfoot as well, it has been demonstrated that the Apachean branch of the Athapaskans did migrate to the Southwest, so Avonlea points on the southern margin of their distribution likely represent the presence of Athapaskan people in this area, at least that is my contention in this paper.

The most southerly occurrence of the Avonlea horizon comes from the Bayou Gulch site (5DA265) in central Colorado, where several points stylistically related to points of the Avonlea horizon are found (Figure 1). These points are found in strata that are assigned to a two sigma calibrated date range of A.D. 1260-1500. Bayou Gulch is situated in the Palmer Divide area of central Colorado, an area that is defined here as an upland of buttes and mesas occurring above the 6000 foot contour that contains a mixed
environment of montane and plains biomes. The Palmer Divide is in essence an extension of the foothills environmental zone 70 miles out onto the Plains.

![Avonlea Points from the Bayou Gulch site.](image)

**Figure 1. Avonlea Points from the Bayou Gulch site.**

It is beyond debate that the Athapaskans migrated south sometime after A.D. 1000. At issue is the timing and route that was taken on the journey south. In this paper I present evidence that proto-Apacheans (represented archaeologically by Avonlea points) were in eastern Colorado by the 13th century and the southern migration of at least some of these people took place through the foothills and Plains periphery of eastern Colorado. Based on this, I offer a scenario for Athapaskan migration that suggests that the timing and route of this migration was in part possible due to the dramatic decrease in the size and density of the resident populations of hunter-gatherers in the foothills and Plains of eastern Colorado during the Late Prehistoric period (A.D. 150-1540).

**Avonlea as Athapaskans: The Right Place at the Right Time**

The Avonlea point type has been recognized as a horizon marker on the Northwestern Plains for over 40 years (Kehoe and McCorquodale 1961, Kehoe 1966). During the past four decades archaeologists have expanded the geographic range of Avonlea and Avonlea-like points from the originally defined “core area” which was originally defined as being centered in southwestern Saskatchewan, with outlying manifestations occupying the glaciated region of North America (Kehoe and
McCorquodale 1961:181). Since the early 1960s, subsequent investigations have extended the spatial distribution of Avonlea and Avonlea-like projectile points. The most complete summary of Avonlea technology, spatial distribution of components and cultural process was published as a collection of papers derived from an Avonlea symposium at the 1984 Plains Conference (Davis 1988). The present range of documented Avonlea sites extends north to the southern margin of the northern boreal forest (Meyer et al. 1988), east to central Manitoba (Joyes 1988), west to southeastern British Columbia and southwestern Montana (Roll 1988), and south to central Wyoming and northwest Colorado (Frison 1988; Fredlund 1988). The “Avonlea Core Area” and its relationship to Bayou Gulch is shown in Figure 2, and the location of sites mentioned in the text is found in Figure 3.

Figure 2. Relationship between the Avonlea Core Area and the Bayou Gulch site.
Figure 3. Location of Colorado proto-Apachean sites mentioned in the text. Blue stars designate sites with Avonlea projectile points; red dots designate sites with early Athapaskan ceramics.

Although many in the archaeological community have accepted the concept of the Avonlea culture or horizon represented prehistoric Athapaskans (e.g. Davis 1988), this association has never been demonstrated conclusively. This association was first posited and maintained not so much due to a direct material link between Athapaskans and Avonlea and its variations, but more out of a sense that the people that made Avonlea points were “in the right places at the right times” to represent proto-Athapaskans between the boreal forests of the north and the northern and northwestern Plains (Wilcox 1988:276). This is not to say that this is insufficient information to make this association. On the contrary, it certainly continues to serve as a working hypothesis.

Avonlea at the Bayou Gulch Site

The Bayou Gulch site (5DA265) is a multi-component prehistoric campsite located in the Palmer Divide area of central Colorado (Figure 4). The Bayou Gulch site is located at an altitude of 1845 m (6060 ft) approximately 28 km southeast of Denver, and is situated on a low hill overlooking the confluence of Bayou Gulch and Cherry Creek, 500 m to the southwest. Cherry Creek is the primary drainage on the north side of the Palmer Divide, a lobe of late Cretaceous and early Tertiary age rocks of the Dawson and Arapahoe formations, and the middle Tertiary age Castle Rock Conglomerate and Wall Mountain tuff. These rocks define an area higher in elevation (1830 - 2400 m, 6000-7800 ft) that projects from the foothills of the Front Range. The Palmer Divide forms the western part of the drainage divide between the South Platte River basin on the
north and the Arkansas River basin on the south. The 1830 m (6000 ft) contour in Figure 4 is used here to delineate the boundary of the Palmer Divide.

Figure 4. Location of the Bayou Gulch site and the Palmer Divide.

The environment of the Palmer Divide is characterized by higher rainfall and lower average temperatures than the surrounding plains, an intermixing of plains short grass prairie and montane and foothills plant communities, in effect increasing the area of the plains - lower montane ecotone and extending it out onto the plains. Stands of Ponderosa pine, scrub oak and mountain mahogany which inhabit the rocky valley slopes and rim rock are interspersed with mesa top short-grass meadows and valley bottom short-grass meadows and riparian areas. Broad transition zones between these different communities exist in many areas, creating extensive ponderosa pine parklands. Animal species that would have been found prehistorically represent both lower montane and plains species, including mule and white-tail deer, pronghorn, elk, and bison, in addition to a great number of smaller mammals, birds and reptiles.

Excavations by the Colorado Department of Transportation (CDOT) archaeologists during the summer of 1979 recovered evidence of occupations dating from the Early Archaic through Protohistoric periods, with the most intensive occupations associated with the Plains Woodland culture during the Early Ceramic Period. The information collected by CDOT eventually became the basis for my thesis (Gilmore}
Within the assemblage of 187 projectile points recovered during all phases of investigation that were complete enough to be assigned to cultural historical types, five points were classified as being very similar to variations of the Avonlea type. At the time, I failed to realize the potential significance of the presence of Avonlea points as far south as central Colorado. Based on the relatively late bracket dates associated with the strata from which these points were recovered (AD 1009 - 1418), compared to the bracket dates for the Avonlea phase (AD 300 - 880) given in Kehoe (1966), I concluded that Avonlea points at Bayou Gulch were found in contexts too recent to be associated with the known chronology of the Avonlea Complex. Based on this conclusion, these points were not designated as Avonlea points, but variations of the later Prairie side-notched type. The number of Avonlea-like points at Bayou Gulch constituted a small and problematic fraction of the total point assemblage.

Subsequent examination of photographs of Avonlea points from sites throughout the known geographic range of occurrence (Davis 1988), including the type site (Kehoe, et al. 1988), has lead me to the realization that there is a great deal of variation in what passes as an "Avonlea" point. With this information, I re-examined the Bayou Gulch materials and determined that an additional three points fell within the range of Avonlea point variation. Seven out of eight of these points are manufactured of local raw material such as Dawson formation petrified wood and Dakota formation orthoquartzite, both of which are found within ten kilometers of the site. This suggests that these points were manufactured locally by resident populations from locally available materials. The single point manufactured from material not available locally (Figure 1c) is made from what is tentatively identified as Flat Top Butte chalcedony, which is a chert derived from the White River formation of northeastern Colorado and southeastern Wyoming, which is found 160 kilometers or more from the site. All of these points fit well within the range of variation of Avonlea points from sites within the Avonlea core.

Although common on the northern Plains and surrounding areas, these points do not have any well documented correlates in sites east of the Continental Divide south of Wyoming, and the closest site with a documented Avonlea component is over 120 miles to the north of Bayou Gulch. There are reports of surface finds of Avonlea points on the plains of northeastern Colorado (Brunswig 1995), and the occasional Avonlea-like point is found in excavated contexts such as one Type C point recovered from the LoDaisKa rockshelter site southwest of Denver (Irwin and Irwin 1959:25), but no Avonlea components from excavated contexts are known south of Wyoming.

None of the Avonlea points from Bayou Gulch were recovered from contexts that were directly dated. However, bracket ages for stratigraphic units were provided by a series of radiocarbon ages from hearth features (Gilmore 1991). Unfortunately, many of the artifacts recovered, including several of the Avonlea points, were not given an assignment to any of the recognized natural strata at the time they were excavated. In order to derive as much meaning as possible from the data, I attempted to reconstruct the natural stratigraphic contexts of artifacts for which none was originally assigned, using the available information concerning exact provenience or arbitrary level assignments, stratigraphic profiles, and field notes. I acknowledge the potential danger inherent in the
creation of context after the fact, and I recognize the possibility of manufacturing data that more closely reflect my desired outcome than actuality.

Unfortunately, due to the nature of the deposits at Bayou Gulch and the methodologies used during the excavation, cultural material associated with the Avonlea component can not be separated from the other Late Prehistoric components. All of the non-temporally sensitive artifacts associated with the Late Prehistoric strata are consistent with generalized adaptations found throughout the plains and foothills, and so no information specific to the Avonlea component other than the presence of that particular culture historical type can be discerned from the assemblage.

Kehoe (1966) states that Avonlea points were in use on the northern Plains between 1740 and 1290 B.P., which corresponds to a calibrated age range of ca. A.D. 240-750 (Stuiver et al. 1998). Work subsequent to Kehoe’s has expanded the temporal range (as well as the geographic range) for the Avonlea phase on the Northern Plains to ca. A.D 1-1300 (Morlan 1988: Figure 5). The majority of Avonlea-like points from Bayou Gulch were recovered from Strata 2b and 3, the majority occurring in 2b (Figure 5). Strata 2b has associated bracket ages of 1004-520 B.P., with a 2-sigma calibrated range of A.D. 970-1500. However, the Avonlea points are thought to be associated with upper Stratum 2b dates, which are derived from charcoal from Feature 33, with a date of 510±85 B.P., 2-sigma calibrated range of A.D. 1300-1630, and from Feature 21, which has an associated date of 640±65, 2-sigma calibrated range of A.D. 1270-1400. One of the Avonlea points was recovered from a context horizontally and vertically proximate to Feature 33. When these two dates are calibrated and the associated probabilities are summed using CALIB 4.3 (Stuiver and Reimer 1993) the result is a 2-sigma range of A.D. 1270-1520, and a 1-sigma range of A.D. 1300-1420. This range slightly overlaps the extreme upper end of the range of Avonlea points on the Northern Plains, and the original thesis concluded that although Type 9 points resemble Avonlea points, the age associated with Feature 33 and the bracket ages for Stratum 2b are more consistent with the transition period between the Prairie and Plains side-notched types at the upper end of Kehoe's (1966) side-notched point chronosequence (Gilmore 1991:119).
Figure 5. Generalized stratigraphic profile of sediments at the Bayou Gulch site.

Although uncommon, early 14th century dates associated with Avonlea points exist, most often occurring with sites on the eastern (lower Saskatchewan River Basin of Manitoba) and southwestern (the Kootenai Basin of western Montana) periphery of the Avonlea core in the Northern and Northwestern Plains (i.e. Roll 1988; Morlan 1988: Tables 3 and 5).

Although once thought to be a cultural diagnostic of prehistoric Athapaskans, recent work suggests that Avonlea is a polyethnic technology that was used by several ethnic groups on the Northern Plains (Reeves 2003, Walde 2003). Because of this, the presence of Avonlea points at Bayou Gulch does not necessarily indicate that proto-Apacheans stopped at the site. However, it is undisputed that Athapaskans migrated into the Southwest and southern Plains, and because there is no evidence for the migration of proto-Blackfeet or other ethnic groups thought to have used the Avonlea point prehistorically, the presence of Avonlea points at the Bayou Gulch site is as much a confirmation of the association of Avonlea points with proto-Apaches as it is a confirmation of Athapaskan migration through Colorado on the Plains periphery. Once again, Avonlea points are in the right place at the right time.

Another question regarding the Athapaskan migration is the route used. Many researchers have supported an intermountain route, with Athapaskans moving though the mountain valleys of western Wyoming, Colorado and the Great Basin to eventually arrive in the Southwest, and from there some groups dispersed east to the Plains (Opler 1983;
Steward 1937: 1940). However, others contend (Ives and Rice 2003, Magne and Matson 2003) that the evidence suggests that a Plains periphery route was more likely. The location of the Bayou Gulch site supports a Plains periphery migration route, and this route would be preferable for several reasons. The Plains periphery route would have provided all of the plant and animal resources associated with both plains and montane biomes, and these resources would be more productive in the relatively warmer and wetter Hogbacks and foothills area than either out on the dryer Plains or up in the colder mountains. This is not to say that both routes could not have been used. Although undated, the Avonlea-like points at Serviceberry shelter (5MF81) in the far northwestern corner of Colorado in Dinosaur National Monument (Swedlund and Lageson 1970) suggests that some Athapaskans may in fact have used the intermountain route.

**Hunter-Gatherer Population in the Platte River Basin of Eastern Colorado**

No matter which route was taken south, the size and density of the resident populations in the corridor would have been an important factor. Determining population of hunter-gatherers is somewhat problematic, and so estimates of prehistoric hunter-gatherer population are rarely attempted for several reasons. Unlike more sedentary agricultural people or the few sedentary hunter-gatherer groups whose economy is based on spatially concentrated resources, hunter-gatherer groups are often highly mobile, and the nature of their impact on the landscape is ephemeral. The consequent meagerness of the archaeological record of these people renders momentary estimates of their population too difficult by standard methods. Although, even if the derivation of actual population numbers is beyond current methodologies, I believe that proportional changes in prehistoric hunter-gatherer populations can be determined.

Proxy measures of relative size of prehistoric hunter-gatherer groups used here include the frequency of radiocarbon ages and number of cross-dated sites per cultural period. Examination of both of these data sets for all sites within the Platte and Arkansas River basins (Figure 6 and 7) suggests that the rate of natural population increase was low in both areas from the end of the Pleistocene to just before the end of the Late Archaic period, ca. 2200 B.P., when the number of radiocarbon ages and sites began to increase dramatically. The number of radiocarbon ages and sites peak in the Early Ceramic/Developmental period. The curves for both basins are relatively simple, and suggest a relatively straightforward picture of population increase, peak and collapse. A distribution of the relative contribution of probability for the set of calibrated radiocarbon dates provides a more accurate assessment of this data.
Figure 6. Distribution of prehistoric radiocarbon ages in the Arkansas River Basin with cultural periods and climatic episodes. Graph of data in Zier and Kalasz (1999), Appendix A.

Figure 7. Distribution of radiocarbon ages in the Platte River Basin with cultural periods and climatic episodes. Adapted from Gilmore et al. (1999), Figure 1-2.
Calibration of radiocarbon ages using CALIB 4.2 (Stuiver and Reimer 1993) allows for the generation of summed probability curves that more accurately reflect the distribution of radiocarbon ages in time. Focusing on just the Late Archaic-Late Prehistoric periods, calibrated radiocarbon curves for both basins suggest that population was much more dynamic during this time than implied by the distribution of uncalibrated radiocarbon ages (Figures 8 and 9). These data suggest that there were three major episodes of population increase and subsequent decrease during the Early Ceramic period in the South Platte Basin, while in the Arkansas Basin there were two minor episodes of population increase and decline during the Developmental period that correlate to the first two episodes in the South Platte, and one major episode of increase and subsequent precipitous decline in the Diversification period.

![Arkansas Basin, Plains Sub-region](image)

Figure 8. Summed probability distribution of calibrated radiocarbon ages for the Arkansas River Basin, Plains sub-region (N=163).
Figure 9. Summed probability distribution of calibrated radiocarbon ages for the South Platte River Basin, Plains sub-region (N=114).

The large and relatively dense populations that inhabited eastern Colorado would have been an impediment to mobile groups of specialized bison hunters. Increased sedentism during the Early Ceramic and Developmental periods is indicated archaeologically by evidence of more intensive processing of plant and animal resources, use of more diverse resources and an increase in habitation structures (Gilmore 1999). In general, Early Ceramic and Diversification period components are more numerous and in stratified sites contain a higher density of cultural debris and features than components dating to the previous Late Archaic or subsequent Middle Ceramic/Diversification period components. As population increases and mobile hunter-gatherer groups divide into smaller, possibly mutually antagonistic groups, the size of the territory controlled by each of these groups is effectively reduced in size. Because they are more spatially concentrated, plant resources become proportionally much more important for subsistence, as access to large migratory mammals becomes increasingly restricted because of the decrease in the size of territory. This increase in population density and decrease in territory would result in greater protection of the available resources against incursions from both neighbors and outsiders. During the middle part of the Early Ceramic period in the Platte Basin the cultural pattern is relatively stable and this is reflected in material culture, which remains relatively unchanged for the period A.D. 300-1000. This pattern is reflected in the temporal period nomenclature selected for the Arkansas Basin in the recently published prehistoric context (Zier and Kalasz 1999). The Developmental period, which correlates to the Early Ceramic period in the Platte basin is followed by the Middle Ceramic correlated Diversification period, the name of which reflects the many cultural manifestations that appear in the archaeological record. Prior to the precipitous decrease in population beginning in the 12th century, it is unlikely that a
small group of specialized hunters would have been allowed to move unimpeded through eastern Colorado, especially along the plains-foothills margin, where population densities were greatest.

However, this situation changes dramatically as population begins to drop. After the final peak in population in the plains sub-region of the Platte Basin during the 11th and early 12th centuries, movement through the area by non local groups would have been much easier than it had been. Archaeological evidence suggests that during the Middle Ceramic period in the Platte Basin (A.D. 1150-1540), populations were much less dense and much more mobile than during the previous Early Ceramic period and changes are seen in material culture that had been relatively stable for 700 years (Brunswig 1996; Gilmore 1999). This suggests that the 13th and 14th centuries in eastern Colorado would have been one of the few windows of opportunity during the preceding 1200 years that would have allowed small groups to migrate through the area relatively unimpeded, at least by other humans.

A Scenario for Athapaskan Migration: The Turbulent 12th and 13th Centuries

It is unknown why population in eastern Colorado decreased when it did, and determining the nature of this change is beyond the scope of the present study. However, population in eastern Colorado is just one piece of a larger picture. The 12th and 13th centuries were a time of dynamic population change and movement throughout the Plains, Southwest and Colorado Plateau (Figure 10).

![Figure 10. Hypothesized population movements during the 12th and 13th centuries.](image-url)
The expansion of Numic peoples from the Great Basin onto the Colorado Plateau and beyond into the Rocky Mountains most likely occurred in the 12th century (Reed 1994). During the mid-12th century on the western Central Plains, Upper Republican peoples had moved out of the horticultural villages in southeastern Nebraska and northeastern Kansas and settled in northeastern Colorado, although they apparently did not stay that long, as evidence suggests that they had left eastern Colorado by the end of the 13th century. The well-documented exodus of the Ancestral Puebloans from the Four Corners area into the lower San Juan and Rio Grande valleys occurred in the late 13th century (Cordell 1991; Lipe et al. 1999) would also have resulted in low population densities in the Four Corners area. Decrease in local populations along the foot of the Front Range and the plains of eastern Colorado and the apparent withdrawal of Upper Republican people from the northeastern part of Colorado by ca. A.D. 1300 would have set the stage for small bands to pass through eastern Colorado at this time relatively unmolested by local populations. This movement could continue into the relatively unpopulated northern Southwest.

As mentioned above, the proximate causes that lead to population decrease in eastern Colorado and elsewhere are not well understood, but changes in climate may have been a contributing factor. During the 13th and 14th centuries there are documented changes in paleoenvironment that are generally coincident with the latter part of population decrease and may have contributed to or even possibly accelerated the decrease that had started several hundred years prior to these changes in climate.

The end of the temporal range of Avonlea on the Northern and Northwestern Plains corresponds with the latter part of the Neo-Atlantic paleoclimatic episode (A.D. 700-1200), which has been characterized as a relatively warm and moist, and the Pacific paleoclimatic episode (A.D. 1200-1450), which has been characterized as a period of increased westerly, or Pacific air circulation resulting in desiccation east of the Rocky Mountains due to rainshadow effect (Wendland and Bryson 1974; Wendland 1978). More recent paleoclimatic information from throughout the western United States suggests that climatic conditions during these periods cannot be characterized as uniform, and there was variation in both the amplitude and geographic extent of precipitation and temperature events during this time.

One particular episode of drought on the Plains has bearing on the period under examination in this paper. Multiple proxies for precipitation suggest that a multidecadal drought of greater magnitude than any drought documented in the historical instrumental record occurred on the Great Plains and throughout the western U.S. in the late 13th and early 14th centuries (Woodhouse and Overpeck 1998). The same drought that coincided with the abandonment of the Southwest by the Ancestral Puebloans at the end of the 13th century was apparently a wide spread phenomenon. Weakly (1965) reported a drought from A.D. 1276 to 1313 in southwestern Nebraska, and analysis of eolian sediments in the Nebraska Sand Hills suggests an episode of eolian activity began sometime after 800 B.P. (Muhs et al. 1997). Closer to Bayou Gulch, Madole (1994; 1995) reports a series of buried A horizons in eolian deposits in northeastern Colorado. Humus from the upper soils in these deposits are dated between 1000 and 840 B.P., and the summed 2-sigma
calibrated probabilities for these radiocarbon dates indicate several alternating dry
(depositional) and cooler, wetter (soil forming) periods occurred between A.D. 970-1300,
followed by eolian deposition for an unknown period of time. Madole also cites a
personal communication of an optical date of 600-700±100 from a dune at Milton
Reservoir north of Denver (Madole 1994:486). Several authors point out that none of the
droughts recorded for the 20th century have resulted in the reactivation of dunes, which
suggests that droughts during the 13th and 14th century were more severe than those
represented in the late 19th and 20th century instrumental record (Madole 1994;
Woodhouse and Overpeck 1999).

Determinations of Holocene temperature fluctuation are more problematic. Many
sources of paleoenvironmental information such as those based on floral and faunal
remains recovered from bog and lake sediments are probably not sensitive enough to
detect temperature changes of less than ±1.4°C, which is greater than the magnitude of
temperature change hypothesized for the Holocene (Broecker 2001). Some workers have
identified an event known as the Medieval Warm Period lasting from A.D. 800-1200, a
period when temperatures were warmer than (or as warm) present, although there is
considerable debate as to the geographic extent or even the existence of this event
(Broecker 2001; Bradley 2000). There is some evidence in proxy records that the 13th
and 14th centuries were actually cooler (Mann et al. 1999; Biondi et al 1999). However,
this seems to represent the initial decrease in temperature that culminated in the Little Ice
Age ca. A.D. 1400-1850 (Mann and Jones 2003). Variations in annual and seasonal
precipitation, drought severity, drought frequency and length of droughts were probably
the factors that affected the prehistoric inhabitants more than temperature fluctuation
during the Holocene.

Why Migrate? The Right Place and the Right Time Again

I have set the stage for Athapaskan migration through eastern Colorado, but the
question remains; why did it occur? Gunnerson (1972) suggests that a rapid migration
occurred during the late 15th–early 16th century as Athapaskans followed rapidly growing
herds of bison that were recovering from 15th century drought. This scenario is plausible,
however given the actual timing of drought in the late 13th–early 14th century this
migration more likely occurred some 100-150 years earlier than suggested by Gunnerson.
An even earlier migration could also be simply explained as the natural result of mobile
Athapaskan groups with a specialized bison-hunting adaptation following herds south
through an area that they could not enter prior to the 12th century when much larger Early
Ceramic period populations of more sedentary hunter-gatherers would have precluded
their movement through the region. Without a large, dense population of more sedentary
people who were invested in protecting their resources to restrict their southern progress,
small bands of Athapaskans could have moved south as a natural part of their seasonal
hunting round. Contrary to Gunnerson’s (1972) contention that Athapaskan migration
was initiated in the 1500s as they followed burgeoning bison herds that were increasing
in response to the end of droughts of the 1400s as they moved south, the early dates from
Bayou Gulch and the paleoclimatic data presented above suggest a scenario in which
proto-Apacheans followed diminishing herds that were moving south into the southern
Plains where the late 13th-early 14th century drought was apparently not as severe as it was in the Four Corners or Central Plains (Ni et al. 2002). Also contrary to Dillehay’s (1974) Bison Absence period II (1450-650 B.P.), Butler (1992) suggests that bison were available in eastern Colorado throughout this period.

A 13th to 14th century passage through eastern Colorado is supported by several lines of evidence. An early 15th century arrival in the Southwest is thought to be reasonable (Forbes 1960; Öpler 1983), and the lexicostatistical data indicates that the initial divergence between the Western Apache and the Kiowa-Apache occurred ca. A.D. 1300 (Bittle personal communication 1961, cited in Öpler 1983). This is supported by archaeological evidence from sites in the mountains and foothills of Colorado other than Bayou Gulch. At the Pinnacle Site (5PA1764) in Park County, Tucker et al. (2003) report that early Apachean ceramics were found in a hearth from which a sediment sample returned a Blue-light Optically Stimulated Luminescence date (BlueOSL) of 577±71 B.P., A.D. 1354-1496 and an Infrared Stimulated Luminescence date (IRSL) of 822±46 B.P., A.D. 1134-1226. The BlueOSL is believed to be more accurate in this situation. A conventional radiocarbon age of 470±60 B.P., 2-sigma cal. range of A.D. 1450-1510 was derived from charcoal recovered from another hearth associated with this component. This date agrees well with the BlueOSL date. A piece of obsidian recovered from Pinnacle was sourced to Obsidian Cliffs near Yellowstone and not the much closer source near Jemez, suggesting that ties to the north were still strong at this time. At a site on the east flank of Pikes Peak, a sample of carbon taken from a possible early Athapaskan pot was AMS dated to 470±40 B.P., 2-sigma calibrated date of A.D. 1410-1470 (Priscilla Ellwood 2003, personal communication). At the Devil’s Thumb site (5BL6904) in Boulder County, a high altitude site northwest of Bayou Gulch, sherds from at least two ceramic vessels with rims decorated with diagonal marks and exhibiting burnishing similar to Dismal River ceramics from the Lovitt site in Nebraska were recovered in association with a hearth that was dated to 350±50 B.P., 2-sigma cal. range of A.D. 1445-1650 (Kindig 2000: 99-107, 2003). In Rocky Mountain National Park, organic residue from Lovitt Plain (Dismal River) sherds at the Lawn Lake site (5LR318) was radiocarbon-dated to 540±50 B.P., yielding a 2-sigma calibrated date of A.D. 1300-1450 (Brunswig 2001: 36, 80-83). Unfortunately, none of the above dated sites contain projectile points directly associated with the dated ceramics. The Eureka Ridge site (STL3296) in Teller County is a single component site that contains over 300 Dismal River sherds of both the Lovitt Plain and a few sherds of the Lovitt Stamped type in association with several small Plains side-notched projectile points (Larmore et. al. 2003). Unfortunately, at the time of this writing no dates are available for this site, but this component serves to demonstrate the small side-notched points are associated with Apacheans in the mountains of Colorado as well as the Dismal River core area in Nebraska and Kansas (Gunnerson 1960, 1968). Based on technological criteria, Plains side-notched points are thought by some to have developed from Avonlea points and represent two stages of the same basic technological tradition (Morlan 1988:307). If this is true, then it seems consistent that an ethnic group that used Avonlea points would subsequently manufacture and use Plains side-notched points.
In the aggregate, the above information suggests that Apacheans had developed a ceramic technology that was distinct from other cultural groups by the mid 15th century, and by that time were a significant presence in the mountains and foothills of central Colorado. If we accept the contention that Apachen ceramic technology is derived at least partly from contact with the Rio Grande pueblos, then this indicates that prior to the mid 15th century proto-Apacheans had already moved through eastern Colorado, come into contact with the Rio Grande pueblos and adopted ceramic technology similar to that of Taos and Picuris (Brugge 1982, Wedel 1959:593), which was then carried or diffused north to be deposited in sites in the mountains and foothills of Colorado. If this series of events had already occurred by the mid 15th century, then proto-Apacheans would almost certainly have been in eastern Colorado by the mid to late 14th century. This supports the presence of migrating proto-Apacheans at the Bayou Gulch site by the late 13th to early 14th century. However, the Southwest origin of proto-Apachean ceramics is in question, and others argue that there is evidence to suggest that the technology has a Central Plains origin (Gunnerson 1968). Even if Apachen ceramic technology is not derived from contact with the northern Pueblos and proto-Apachean sites in the mountains and foothills represent a direct migration from points north, this evidence still suggests an early entry into the region. The proxy population curves offer additional evidence of where and when this migration occurred. The summed probability distribution curve for the two dates associated with Avonlea points at Bayou Gulch corresponds with a small increase in the probability curve for the plains sub-region, and it also corresponds with a larger increase on the probability curve for the hogbacks/foothills sub-region (Figure 11a and b).
Figure 11a and b. Proxy population curves for the Plains and foothills regions of the Platte River basin with the summed probability distribution of the Bayou Gulch radiocarbon dates demonstrating the correlation of late Avonlea dates and the signal in the population curve that indicates migrating proto-Apacheans.

These corresponding signals suggest that the population proxy curves for these regions may be reflecting the presence of migrating proto-Athapaskans. The stronger signal in the hogbacks/foothills curve indicates a greater percentage of sites dating to this period in this sub-region than on the plains, which I interpret as representing the migration route along the Plains periphery and up into the hogbacks/foothills.

Summary and Conclusions

As was said above, the one piece of information that is not a matter of conjecture or is at least not subject to realistic speculation or dispute is that at some time in the past the ancestors of the present and historic Athapaskan residents of the Southwest and southern Plains migrated from somewhere to the north. That prehistoric Athapaskans used Avonlea points is open to interpretation, but they were in the right place at the right time, and Athapaskans were probably one of several groups that used Avonlea points.
I hope not to be caught up in the cultural historical trap of equating points with people, but the persistence and consistency of projectile point types does suggest that these forms were important enough to the people who made them to maintain them without much variation in time and space that it is inescapable to conclude anything other than that the manufacturing process and final product communicated information or reinforced personal and group identity, and that this information was of sufficient power that projectile point styles changed little if at all for centuries, and then changed over short periods of time. Avonlea points apparently fit this pattern; they were a horizon marker on the Plains for hundreds of years, and then disappeared sometime after the 13\textsuperscript{th} century.

The evidence presented here suggests that proto-Apacheans had arrived at the Bayou Gulch site on the plains/foothills margin of central Colorado by the late 13\textsuperscript{th} or 14\textsuperscript{th} century, at a time when they were still manufacturing Avonlea points, which would seem to suggest a relatively rapid movement south from the Avonlea core. Evidence from other sites in the region suggest that proto-Apacheans were inhabiting the mountains of Colorado, using Plains side-notched projectile points and manufacturing micaceous plain-ware pottery identifiable as Apachean by the early to mid 15\textsuperscript{th} century, which would require this technology to be acquired sometime prior to that time. The timing of these events appears to have been even earlier than that hypothesized previously by some researchers (D. Gunnerson 1972, J. Gunnerson 1979), but tends to validate some estimations and a growing body of evidence for an earlier entry into the Southwest (Brunswig 1995: 174, 2001; Forbes 1960; Kindig 1997, 2000, 2003; Opler 1983).

References Cited

Biondi, F., D.L. Perkins, D.R. Cayan, M.K. Hughes

Bradley, Ray

Broecker, Wallace S.

Brugge, David M.

Brunswig, Robert H. Jr.
1995 Apachean Ceramics East of Colorado’s Continental Divide: Current Data and New Directions. In *Archaeological Pottery of Colorado: Ceramic Clues to*


2001 Lawn Lake (5LR318): Results of an Archeological Mitigation Research Project at a High Altitude Prehistoric Site in Rocky Mountain National Park. Report to Rocky Mountain National Park, National Park Service, Department of Anthropology, University of Northern Colorado, Greeley, Colorado.

Butler, William B.

Cordell, Linda S.

Davis, Leslie B. (editor)

Dillehay, Tom D.

Forbes, Jack D.

Fredlund, Lynn B.

Frison, George C.

Gilmore, Kevin P.
1999 The Late Prehistoric Stage. In Colorado Prehistory: A Context for the Platte River Basin, by Kevin Gilmore, Marcia Tate, Mark Chenault, Bonnie


Gunnerson, James, H.


Gunnerson, Dolores A.

Irwin, H. J. and C. C. Irwin
1959 Excavations at the LoDaisKa Site in the Denver, Colorado Area. Proceedings No. 8, Denver Museum of Natural History.

Ives, John W., and Sally Rice

Joyes, Dennis C.

Kehoe, Thomas F.

Kehoe, Thomas F. and B.A. McCorquodale

Kehoe, Thomas F., Bruce McCorquodale and Alice B. Kehoe


1994 Stratigraphic Evidence of Desertification in the West-central Great Plains within the past 1000 yr. *Geology* 22:283-486


Martin Magne and R. G. Matson

Meyer, David, Olga Klimko and James Finnigan

Morlan, Richard E.

Muhs, D.R., J.B. Swinehart, S.D. Cowherd, S.A. Mahan, C.A. Bush, R.F. Madole and P.B. Maat

Ni, Fenbiao, Tereza Cavazos, Malcolm K. Hughes, Andrew C. Comrie and Gary Funkhouser

Opler, Morris E.

Reed, Alan D.

Reeves, Brian O.K.

Roll, Tom E.
Steward, Julian H.

1998 INTCAL98 Radiocarbon Age Calibration, 24000-0 cal BP *Radiocarbon* 40(3) 1041-1083

Stuiver, Minze, and Paula J. Reimer

Swedlund, Alan C. and E. Donald Lageson

Tucker, Gordon C. Jr., Marcia J. Tate and Juston J. Fariello

Walde, Dale

Weakly, H.E.
1965 Recurrence of Drought in the Great Plains during the Last 700 Years. *Agricultural Engineering* 46(85).

Wedel, Waldo R.

Wendland, Wayne M.

Wendland, Wayne M., and Reid A. Bryson
Wilcox, Davis R.  

Woodhouse, Connie A. and Jonathon T. Overpeck  

Zier, Christian J., and Stephen M. Kalasz (editors)  
Authors Contact List-Athapaskan Section Articles

**Gilmore, Kevin**, Archaeological Research Institute, University of Denver, 2050 E. Iliff Ave., Denver, CO. 80208.

**LeBlanc, Raymond**, Department of Anthropology, University of Alberta, Edmonton, Canada. T6G1T2.

**Loendorf, Larry**, Department of Sociology and Anthropology, New Mexico State University. 6220 Mojave St. NW, Albuquerque, NM 87120.

**Magne, Martin**, Parks Canada, Calgary. 550-220-4 Ave SE Calgary, Alberta, Canada T2G4X3.

**Matson, R. G.**, Department of Anthropology and Sociology, University of British Columbia, 6303 NW Marine Dr. Vancouver, BC, V6T1Z1.

**Mitchell, Mark D.**, Department of Anthropology, University of Colorado, Boulder, CO 80309-0233.

**Ormerod, Patricia**, Department of Anthropology and Sociology, University of British Columbia, 6303 NW Marine Dr. Vancouver, BC, V6T1Z1.

**Seymour, Deni J.** Ph.D., 2625 Pennsylvania NE #2000, Albuquerque, NM. 87110.

**Tveskov, Mark**, Department of Sociology and Anthropology, Southern Oregon University, 1250 Siskiyou Blvd., Ashland, OR 97520.