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Aboriginal Alpine Ceremonialism in the White Mountains, California

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At 3,609 m. (11,840 ft.) elevation in the White Mountains of Eastern California is a site containing 216 rock features consisting of cairns, pits, and other stacked-rock constructions but very few artifacts. Two obsidian bifaces, two milling tools, and lichenometric dating point towards site occupation between 440 and 190 cal B.P., contemporaneous with the White Mountains Village Pattern, which was marked by intensive seasonal occupations of multi-family groups in the alpine ecozone of the range. Though the site's features are similar to facilities associated with artiodactyl hunting across the American West, their diversity, abundance, and distribution are more consistent with ceremonially-oriented sites on the Plains, in the Mojave Desert, and especially on the Plateau. This, in conjunction with the site's setting, suggests that there were ritual functions associated with the site, and that the ceremonial use of high-altitudes has been overlooked in the region's research history.

IT IS WIDELY RECOGNIZED THAT RITUAL, SHAMANISM, and ceremonialism are and were associated with the hunting of large game (e.g., Garfinkel 2006; Kelly 1936; Lowie 1924; McNiven and Feldman 2003; Mikhailova 2006; Steward 1941; Turpin 1992), as well as with high-altitude land use in many parts of the globe (Brunswig 2005; Brunswig et al. 2009; Ceruti 2004; Diggs and Brunswig 2013; Meddens et al. 2010; Ramble 2002; Steward 1933). This recognition has recently come to the fore in California and Great Basin archaeology, in large part due to the debate over the mechanisms that led to increases in artiodactyl hunting during the Middle Archaic (Broughton and Bayham 2003; Hildebrandt and McGuire 2002; McGuire and Hildebrandt 2005) and to a resurgence of rock art research in the region, much of it directly or implicitly linked to the symbolic identification of world renewal, landscape and resource revivification, and prey animals' place in Numic cosmology (Garfinkel

2006; 2007; Garfinkel et al. 2007, 2009, 2010; Whitley 1992). What is less well known is how these practices played out in landscape and site-level contexts, leaving the majority of settlement and site-specific studies in the region to focus on the tried-and-true Great Basin trope—the gastric (Morgan and Bettinger 2012; Steward 1938a:46; Zeanah and Simms 1999; but see Yohe and Garfinkel 2012), expressed mainly via cost-benefit optimal foraging analyses (Broughton and Grayson 1993; Byers and Broughton 2004; Morgan 2009). But evidence for ceremonialism is found across western North America (Diggs and Brunswig 2013; Fredlund 1969; Garfinkel et al. 2009; Kornfeld et al. 2010) and within the western Great Basin proper, in particular along the eastern front of the Sierra Nevada (Garfinkel 2007; Yohe and Garfinkel 2012; Young et al. 2009). This article provides new descriptions and analysis along these lines, arguing that ceremonialism was indeed a

component not only of lowland behavioral patterns but also of the unique Late Prehistoric high-altitude village pattern of the White Mountains of eastern California.

This study focuses on a site known as Campo Borrego, in the southwestern portion of the range. The site is distinctive for its 216 features: cairns, pits, and variously-shaped stacked rock structures. Though these types of features occur individually or in small groupings across the Great Basin and are often interpreted as either being functionally associated with hunting (Canaday 1997; Lubinski 1999) or in rarer instances with ceremony (Arnold and Stoffle 2006), a concentration as large and diverse as this is atypical, particularly for the western Great Basin (but see LaPierre 2012 for a different type of rock feature site on the east side of Searles Lake, 240 km. south of the White Mountains). Within this general context, this paper provides description, spatial analysis, and chronometric assay of the rock features at Campo Borrego, arguing that they are an outcome of ceremonial activities associated with the development of the White Mountain Village Pattern, ca. 1,000–150 cal B.P. (Bettinger 1991a). This conclusion is discussed in reference to this pattern and in comparison to other evidence for ceremonialism and ceremonial landscapes more broadly, particularly those found at high altitude.

WHITE MOUNTAINS PREHISTORY AND EVIDENCE FOR REGIONAL CEREMONIALISM

White Mountains prehistory and its relationship to high altitude land use across the intermountain West is thoroughly summarized elsewhere (Bettinger 1990, 1991a, 1991b, 1996, 1998, 2008; Canaday 1997; Grayson 1993; Morgan et al. 2012a, 2012b; Stirn 2014). The gist of these summaries is that across the many mountain ranges of the Great Basin low-intensity hunting, based on either long-range logistical mobility or on small-group residential mobility, prevailed at high altitudes. In the White Mountains and central Nevada's Toquima Range, however, this hunting pattern changed to what is referred to as a "village" pattern in the very late Holocene (see also Morgan et al. 2012a for documentation of a superficially similar pattern in Wyoming's Wind River Range). In the case of the White Mountains, this may have begun as early as approximately 1,350 cal B.P., but

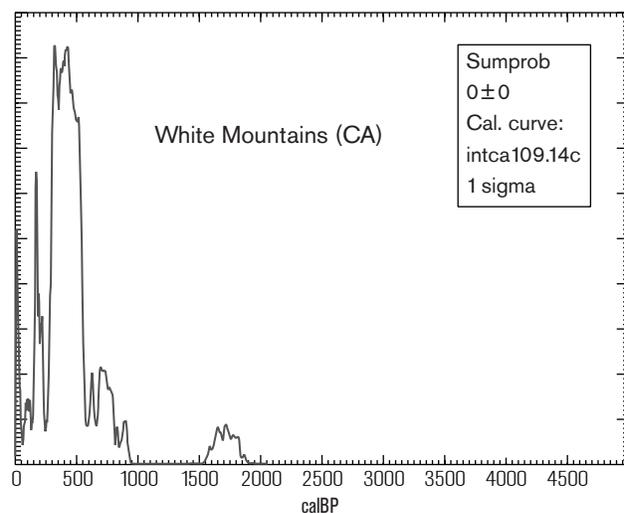


Figure 1. White Mountains village ¹⁴C summed probability distribution, reproduced with permission from *North American Archaeologist* (Morgan et al. 2012a:Fig. 8).

it was certainly well-emplaced by approximately 650 cal B.P. In the Toquima Range, this pattern, identified at a single site, may have emerged several centuries or even a millennium earlier but nonetheless solidified after roughly 1,000 cal B.P. (Bettinger 1991a; Thomas 1982; 1994; Thomas, personal communication 2010) (Fig. 1).

The White Mountains Village Pattern is expressed in at least thirteen sites containing one or more multi-course rock-ring house foundations and very well-developed middens containing abundant charcoal, faunal remains, and copious quantities of flaked and ground stone artifacts, all at elevations between 3,130 m. and 3,854 m. (10,270–12,645 ft.). These sites compare favorably in structure to village sites found on the floor of the Owens Valley, immediately west of the range (Bettinger 1975, 1982, 1989; Delacorte and McGuire 1993). Whereas the preceding pre-Village pattern was characterized by long-range logistical hunting and a focus on large game, mostly of mountain sheep (*Ovis canadensis*), the Village Pattern was both qualitatively and quantitatively different. It relied instead on seasonal residential mobility and site occupation by multi-family groups who sustained themselves with large game like mountain sheep, small alpine shoots and roots, and grass seeds and nuts, some of which (like piñon pine nuts) were transported to alpine villages from lower elevations (Scharf 2009). The degree to which this pattern reflects an increasing exploitation of small animals like marmot (*Marmota flaviventris*) is contentious (Broughton and Grayson 1993; Grayson 1991), but

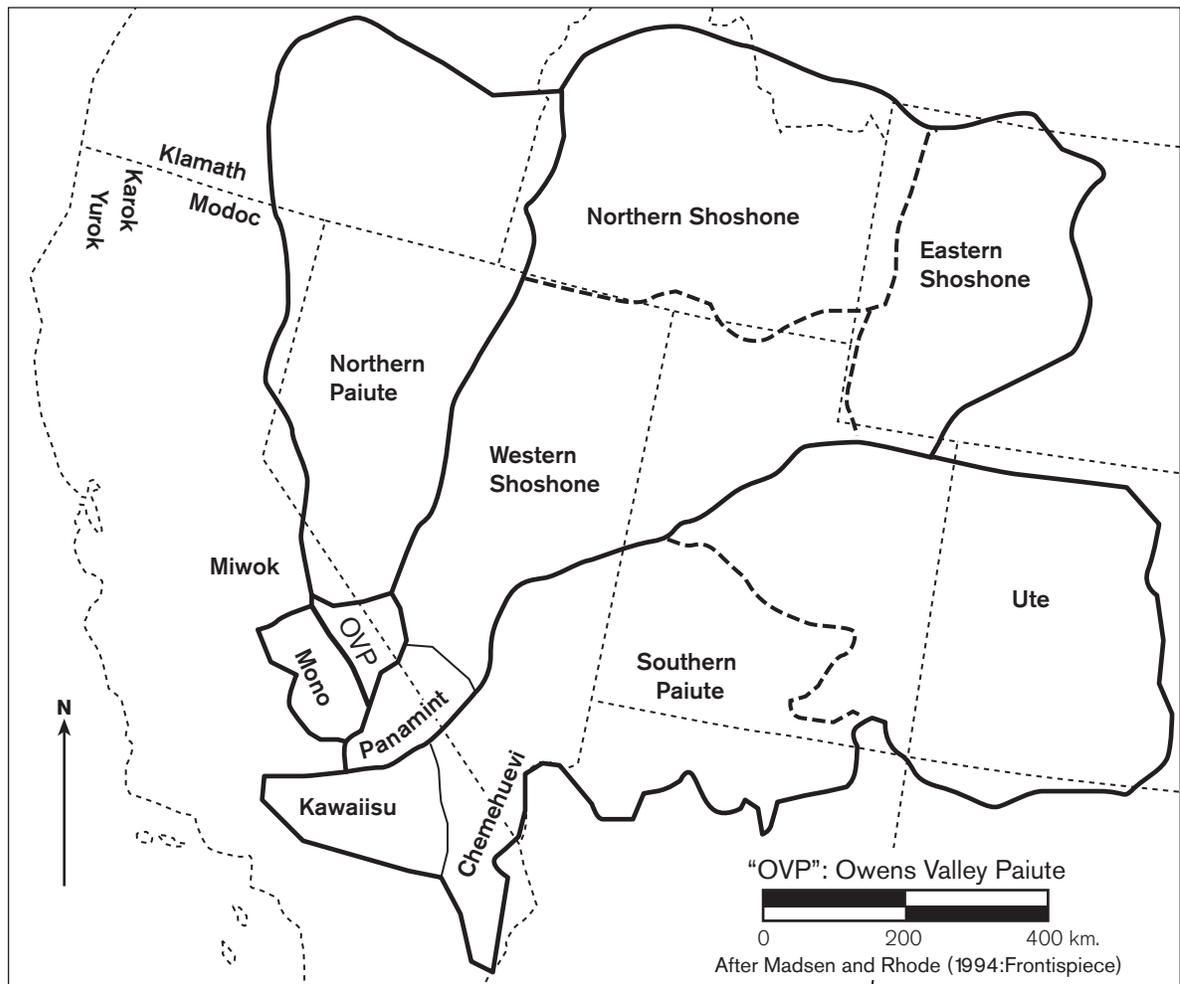


Figure 2. Map of the Great Basin and Eastern California showing ethnolinguistic subdivisions for groups mentioned in the text. Adapted from Madsen and Rhode (1994: Frontispiece).

it is quite clear that small fauna comprised a significant portion of Late Prehistoric White Mountains village diets (Bettinger 1991a; Grayson 1991). The mechanisms that drove this shift in late Holocene settlement patterns are the subject of considerable debate, but the most forceful arguments identify population increase associated with the geographic expansion of the *Numa* as its driving force (Bettinger 1991b, 1994, 1999; Bettinger and Baumhoff 1982; Delacorte 1994; Garfinkel 2007; Garfinkel et al. 2010; Morgan 2010; Sutton 1987; but see Raven 1994). Causal factors and the degree to which small fauna intensification played a role in this pattern aside, what is abundantly clear is that there was a fundamental shift in settlement and subsistence behaviors beginning ca. 1,000 cal B.P. that is clearly expressed in the Late Prehistoric alpine village pattern of the White Mountains.

Unfortunately, information on aboriginal ceremonialism at altitude in the region is almost nil, a result of limited treatments of the subject in regional ethnographies. However, more general discussions of ceremonial practices among the Owens Valley Paiute, Western Mono (hereafter simply *Mono*), Western Shoshone, and other nearby ethnolinguistic groups are provided in Steward's descriptions of the Owens Valley Paiute (Steward 1933, 1934, 1936, 1938a, 1938b), in various cultural element distributions (Aginsky 1943; Driver 1937; Steward 1941), and in other regional ethnographic works (Fowler 1989; Freed and Freed 1963; Garfinkel and Williams 2011; Liljeblad and Fowler 1986) (Fig. 2). Chief among such practices were the Round Dance, the mourning ceremony or "Cry," various puberty rites and dances, birthing and death practices, and shamanistic

curing ceremonies. There is no indication, however, that any of these ceremonies required the construction of features for their performance. The only exceptions to this might be the widely-practiced Round Dance, which was performed inside a brush enclosure, and perhaps the pine-nut festival, which at least among the Washoe entailed driving two sticks in the ground to serve as a sort of “goal” for men’s football games. Neither, of course, involved the construction of cairns, pits, or other stacked rock features.

Steward (1933, 1934, 1938a, 1938b) documents the aboriginal use of high-altitude landscapes in the Sierra Nevada, White, and Inyo mountains as hunting grounds (mainly for sheep and deer), but the question as to what types of ceremonial activities may have occurred in these locales is left unanswered. The concept of *puha*, however, is and was central to the Owens Valley Paiute worldview and religious practices. Seeking and attaining *puha* was an essential component of hunting, curing, and other endeavors often affiliated with ritual or ceremony in the greater region. This concept centers on the idea that in regional cosmologies supernatural power (*puha*) flows between upper, middle (the one people inhabit), and lower worlds, connecting the phenomena within each of these metaphysical planes (Arnold and Stoffle 2006; Goss 1972; Stoffle and Zeneño 2001a; Vander 1997). While individuals often attained *puha* by chance, they may also have sought it out to elicit aid and ensure success in a task such as hunting, but more generally as part of an overarching concern for world renewal and landscape revivification (Liljeblad and Fowler 1986:418; Steward 1933, 1936). Still, there is no direct evidence that Owens Valley Paiute hunters used any formal ceremonies to attain *puha*—it was garnered through chance, individual prayer, and a covenant with the supernatural power itself (but see Garfinkel 2006; Garfinkel et al. 2007, 2009 and discussions below on the relationship between Coso hunting and petroglyph making).

There is, however, evidence of hunting-related ceremonialism in regional ethnographies. Among the Paiute in the Owens Valley, the Sierra Nevada, and the White Mountains, communal hunting (i.e., drives of deer, sheep and pronghorn) was organized by a headman, though shamanism and magic were not directly associated with this activity (Steward 1933:253). Gilmore (1953), however, notes that a round dance was held prior to

sheep hunts in the Owens Valley area. Farther afield, Steward (1938a:128) claims shamans were involved in ceremonies for communal antelope hunts among the Western Shoshone but that no such ceremony was associated with deer hunting. The Miwok performed ceremonies both before and after the deer hunt in the central Sierra Nevada (Aginsky 1943); the Kawaiisu and Tübatulabal practiced similar rituals (Driver 1937; Garfinkel and Williams 2011). Driver also documents a pre-hunt ceremony performed by the Mono, close ethnolinguistic relatives of the Owens Valley Paiute (Morgan 2010). Gayton (1948) notes the use of special helper animals (deer and cougar bestowing hunting power) among the Mono, and Aginsky (1943) identifies Deer Doctors (shamans) among the Mono. Park (in Fowler 1989) notes a similar pattern for the Northern Paiute, with shaman-led ceremonies for group antelope hunting but not for deer.

Further, specific evidence for bighorn sheep ceremonialism and individual hunting-oriented shamanism is also fairly well documented among Great Basin peoples. For instance, “game dreamers,” individuals who dreamed of sheep as a way of ensuring a successful hunt, were common among the Northern and Southern Paiute, Western Shoshone, and Chemehuevi (Hedges 2001; Kelly 1936; Kelly and Fowler 1986). At least among the Western Shoshone, game dreaming may also have been associated with curing (Steward 1941). Sheep ceremonialism among the *Numa* more generally was also associated with puberty rights, especially a boy’s transition into marriageable adulthood (Myers 1997; Steward 1941; Whitley 1982). It may also have been indirectly associated with rain shamanism (Fenenga and Riddel 2012; Keyser and Whitley 2006; Whitley et al. 1999a, 1999b). Among the Northern Paiute, pre-hunt dances were associated with bighorn sheep (Lowie 1924; Vander 1997). As is the case with other ceremonies among the *Numa*, however, direct material evidence for the above is unfortunately rare or lacking.

The most recent argument for hunting-related ceremonialism again involves the Coso sheep petroglyphs, which some believe were produced as part of “increase rites” associated with Mid-Archaic (likely pre-*Numa*) bighorn sheep hunting (Garfinkel 2006; Garfinkel et al. 2010; Hildebrandt and McGuire 2002; McGuire and Hildebrandt 2005). There is also some archaeological



Figure 3. Site overview facing southwest. Note bedrock knoll in middle ground, talus and patterned ground below the knoll, and summit ridge in background.

evidence for bighorn sheep ceremonialism. Yohe and Garfinkel (2012) document a possible bighorn sheep shrine at the Rose Spring site west of the Coso Range in southeastern California. The excavated feature consisted of a bighorn sheep cranium ostensibly placed atop a rock cairn. Radiocarbon dates associated with the feature are $1,360 \pm 70$ and $1,400 \pm 50$ rcy B.P., or about 1,500 cal B.P. (early Haiwee Period [Bettinger and Taylor 1974]). In their review of regional evidence for similar features, Yohe and Garfinkel note historical and ethnographic accounts of sheep horn and deer antler caches made by the Tohono O'odham and Yuma in Arizona (Casetter and Bell 1942; Grant 1980); sheep crania cached in pits in the northern Sierra Nevada (Wilson 1963); a feature somewhat similar to the one at Rose Spring found in Wyoming's Mummy Cave (Husted and Edgar 2002); and a bighorn sheep skull and two associated projectile points found on a Mid-Archaic house floor in Dry Valley north of Reno, Nevada (Young et al. 2009).

In sum, there is indeed plenty of evidence for ceremonialism and ceremonial activities in the region. Some of this is associated with animal ceremonialism (and especially sheep hunting) among the Owens Valley Paiute and among the *Numa* more generally, but there is little documentation of ceremonies which might result in feature construction. Exceptions to this generalization come from scattered and somewhat equivocal archaeological evidence for bighorn sheep ceremonialism during the Mid-Archaic ca. 4,500–1,000

cal B.P. (Garfinkel et al. 2009; McGuire and Hildebrandt 2005), but also during the Haiwee Period, ca. 1,350–650 cal B.P. (Bettinger and Taylor 1974; Yohe and Garfinkel 2012). It is also clear that high altitudes played integral roles in regional settlement and subsistence patterns, particularly after about 1,000 cal B.P., when a much more intensive village pattern developed that was based in part on hunting game like mountain sheep. What is unclear is how these disparate phenomena articulated in the region and how they did so at high altitude, where so much of the region's artiodactyl hunting took place, but where ethnographies are unfortunately so silent. Additional material indications of such ceremonialism would naturally shed light on the subject and help bring empirical evidence to bear as to the role and extent of such ceremonialism in the region (see Malouf 1966, and Steward 1968 for differing opinions on the subject).

SITE DESCRIPTION AND ANALYSIS

Evidence for such ceremonialism (though of a type admittedly unclear), we argue, is found at the Campo Borrego site. The site is in the southern portion of the White Mountains at an elevation of 3,609 m. (11,840 ft.). It surrounds a distinctive, ca. 3 m. high granitic knoll protruding from a low, gently-sloping NE-SW trending ridgeline immediately east of the main summit ridge of the range (Fig. 3). The bedrock comprising the knoll is immediately south of a contact with the distinctive,

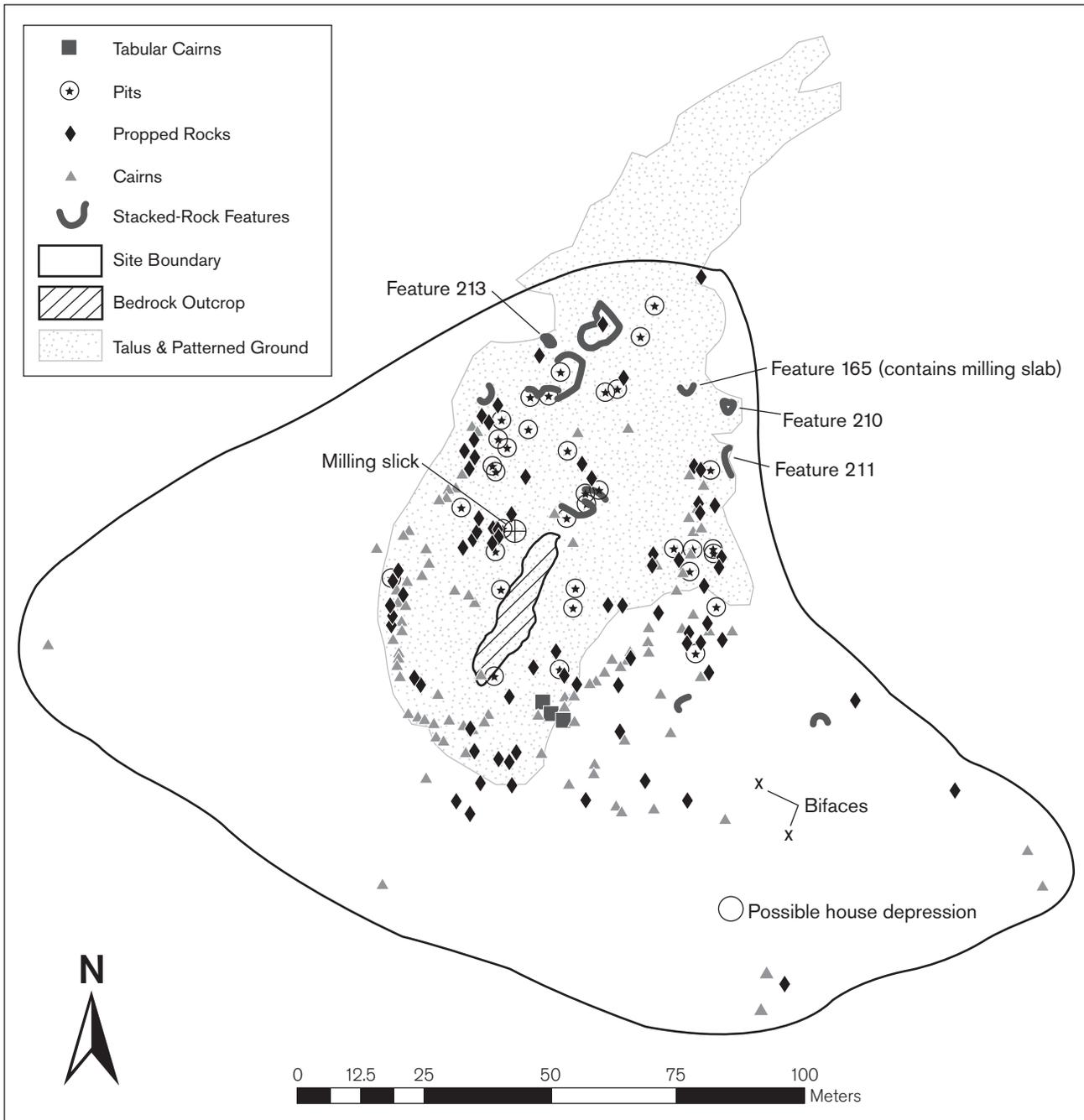


Figure 4. Site map.

white-colored Reed Dolomite, which outcrops on the surface of the northernmost portion of the site (Nelson et al. 1991). Most of the site is covered by talus eroding from the knoll and Quaternary deposits of cryogenically-active patterned ground indicating transport downslope, in a north-northeasterly direction characteristic of the movement of Quaternary rock glaciers in the range (Elliott-Fisk 1991).

The site measures 214 m. NW-SE by 147 m. NE-SW, for a total area of 1.8 ha. Most of the site's constituents, however, are concentrated within a 111 m. NE-SW by 80 m. NW-SE area (total area 0.7 ha.) surrounding the knoll in the center of the site (Fig. 4). The site contains 216 features of varying construction: cairns, pits, and stacked-rock features (described in greater detail below). It also contains one possible house depression, a slab,

a milling slick, and two obsidian biface fragments. No other surface artifacts are present save a few pieces of metal wire, remnants of a mid-twentieth century telephone line that passed within 150 m. of the site en route to the University of California's research station on Mount Barcroft (USGS 1994). The house depression is in the far southeastern portion of the site, well beyond the rock structures, and consists of a 5–10 cm. deep circular depression with a diameter of 2.3 m. The pecked and ground milling slab is contained within one of the site's stacked rock features (Feature 165).

By far the most common cultural constituents at the site are several varieties of stacked-rock features (Fig. 5). These consist of (a) *cairns* ($n=93$), consisting of two or more rocks stacked atop one another; (b) distinctive *tabular cairns* ($n=3$), consisting of a flattened rock placed atop at least one other rock to form an upper surface that is parallel to the ground; (c) *propped rocks* ($n=75$), where a rock is propped up by at least one additional rock so its long axis is perpendicular to the ground surface; (d) *pits* ($n=33$), which consist of a circular or semi-circular area excavated in the talus surrounding the knoll in the center of the site; (e) *walls* ($n=13$), which are circular, U-shaped, J-shaped, linear or amorphous arrangements of at least one course of stacked-rock derived from the talus; and (f) *rings* ($n=2$), circular



Cairn



Tabular Cairn



Propped Rock



Pit



Wall



Ring

Figure 5. Photographs of diagnostic feature types.

multi-course, stacked-rock constructions (metric data on all of these features are presented in Table 1). All are constructed of the granitic talus at the site, except for rare instances where dolomite was incorporated into a number of features, most notably in several propped rocks in the northeastern portion of the site, where the

Table 1

STACKED ROCK FEATURE METRIC DATA

Cairns	No. of Rocks/Features	1	2	3	4	5	6	7	10	11	<i>n</i>	\bar{x}
	Count of Features	11	26	20	12	8	10	2	2	2	93	—
	Count of Rocks	11	52	60	48	40	60	14	20	22	327	3.5
Tabular Cairns no. of rocks/feature	1	1	1	—	—	—	—	—	—	—	3	2

Propped Rocks	<i>n</i>	Height Range	Height \bar{x} and σ
	75	20–141 cm.	43 ± 17 cm.

Pits	<i>n</i>	Length Range	Length \bar{x} and σ	Length \bar{x} and σ
	33	0.6–2.8 m.	1.6 ± 0.5 m.	1.7 ± 0.6 m.

Walls	<i>n</i>	Length Range	Length \bar{x} and σ	Width \bar{x} and σ	Shape (<i>n</i>)			
					U	J	Linear	Amorphous
	13	1.2–8.7 m.	3.9 ± 2.5 m.	2.2 ± 1.6 m.	5	2	2*	4

Rings	<i>n</i>	Diameter Range	Diameter \bar{x} and σ	*includes 4.4 m. long linear structure (Feature 211) believed to be of Basque origin built atop a previously-existing prehistoric feature.
	2	1.7–1.9 m.	1.8 ± 0.1 m.	

dolomite outcrops. Importantly, all are either multi-course constructions or vertically propped rocks of a type that do not occur elsewhere in the abundant, cryogenically-patterned ground of the White Mountains. In fact, after a full summer of survey across the entire southern portion of the range, much of it over patterned ground similar to that at Campo Borrego, no other similar sites have been identified (Bettinger 1991a). This, and the features’ similarity to other stacked rock features found across the American West, clearly indicates they are cultural rather than natural phenomena (see Thomas 1982:80 for a description of how straightforward it often is to distinguish cultural from natural features in alpine geomorphic contexts).

Cairns and propped-rock features are similar in construction technique and are more or less equivalent in terms of frequency. They are distributed in a roughly U-shaped pattern around the western, southern, and eastern edges of the bedrock knoll in the center of the site (Fig. 4). Pits, walls, and rings are distributed in a manner more or less complementary to that of the cairns and propped rocks—these are found on the western, northern, and eastern edges of the talus and in the patterned ground surrounding the knoll where deep deposits of talus and loose rock are present. Pits,

walls, and rings, however, do not form such an explicit periphery around the knoll, but rather appear in most cases to take advantage of natural depressions in the rock colluvium in which they are located (the exceptions to this are the two rings mentioned above and the “Basque” structure, described below). The three tabular cairns are clustered in a 1.5 m.² area in the southeastern portion of the site’s main feature concentration.

The most anomalous of these features are Feature 211, a rectilinear, 1 m. high, multi-course L-shaped wall in the northeasternmost portion of the site; Feature 210, located 7 m. north of Feature 211; and Feature 213, on the northwestern periphery of the site. Given its superficially rectilinear construction, Feature 211 likely represents a Euroamerican and arguably a Basque construction, given Basque shepherders’ tendency to use alpine zones as summer ranges and to occasionally build such rectilinear features, as well as the presence of such features elsewhere in the White Mountains (Ababneh and Woolfenden 2010; Douglass and Lane 1985; Georgetta 1972:78; 83–90; Mallea-Olaetxe 2009). Importantly, the uppermost courses of this feature appear to have been superimposed on two roughly U-shaped features that are more consistent with aboriginal constructions (Canaday 1997; Hockett et al. 2013; Steward 1933). Features 210

Table 2

***R. BOLANDARI* THALLI DIAMETERS (IN MM.)**

Feature	Feature Type	r1	r2	r3	r4	r5	r6	r7	r8	r9	r10	r11	r12	Mean
141	Pit	30	27	25	22	21	20	20	19	17	17			21.8
143	Cairn	24	23	22	21	20								22.0
137	Pit	28	27	24	22	19								24.0
129	Cairn	14	13	10	7									11.0
95	Cairn	18	16	13	13	12	10	9						13.0
97	Cairn	21	20	18	17	17								18.6
83	Cairn	21												21.0
39	Propped Rock	13	12	10										11.7
22	Pit	30	30	27	19									26.5
211	Wall*	15												15.0
211	Wall*	28	15											21.5
211	Wall*	23	20	17	16									19.0
Control Sample:		58	56	44	43	43	38	34	32	30	28	28	28	38.5

*Lichens found growing on well-protected, deeply buried boulders likely predating historic (i.e., Basque) construction.

and 213 are both multi-course circular constructions of unclear cultural affiliation.

In terms of dating, the site’s features have been in place since at least 1983 when the site was first recognized by an archaeological field school from the University of California, Davis. The milling slab, slick, and obsidian bifaces clearly indicate the site has a prehistoric or ethno-historic (i.e., likely Paiute) component. It is also likely that the site area was used by Basque shepherders in the late nineteenth and early twentieth century and was traversed again in modern times during the installation of a telephone line to Barcroft Station in the mid-twentieth century.

Given the absence of diagnostic artifacts and dateable organic remains, a simple lichenometric study was used to ascertain the temporal context of the rock features at the site. Despite the problems associated with this method, it has been used with some success across the west, and in the White Mountains more specifically (Benedict 2009; Bettinger and Oglesby 1985; Curry 1971). The study was hampered to some degree by the fact that the site is in a very active geomorphic environment where snow, wind abrasion, and alluvial and colluvial erosion are active and hamper lichen development on exposed rock surfaces, particularly above ground level (i.e., the stacked-rock features themselves), as well as on boulders away from the site. Within this geomorphic

context, lichens were identified and their thalli measured on a sample of the stacked rock features at the site. Measurements were made only on what Bettinger and Oblesby (1985) identified as *Rhizocarpon bolandari*, a dark brown, slow-growing lichen they used successfully in earlier lichenometric studies in the White Mountains, and a preferred taxon for lichenometric dating (Bettinger and Oglesby 1985). A total of 51 measurements were taken of the minimum diameter of isolated, non-coalescing *R. bolandari* thalli identified on ten of the site’s features. An additional twelve measurements were made of the same lichen taxon found growing on a sample of rocks outside the site boundary. These were used as a control sample to document lichen growth in natural as opposed to cultural geomorphic contexts (*sensu* Schiffer 1987).

The results of this analysis are presented in Table 2. The mean and standard deviation of lichen diameters measured on site features is 19.06 ± 5.85 mm.; the range is 7–23 mm. For lichens growing on rocks outside the site area, these same data are 37.69 ± 10.51 mm. and 28–58 cm. A two sample t-test (each dataset is normally distributed) indicates a far less than 1% probability that these two samples were drawn from the same population ($t=6.16; df=13; p<.0001$). In conjunction with the 18.63 mm. difference in sample means, this suggests that the lichens on site features are roughly half the age of those on the surrounding landscape and that feature

construction post-dates the latest stabilization of this landscape, likely post-dating a late Holocene Neoglacial advance (Elliott-Fisk 1991). More critically, all but three of the measurements made on the site's features are greater than Bettinger and Ogelsby's (1985: Table 4, p. 210) approximate cutoff for the beginning of the Historic Period in the White Mountains of 10 mm., or roughly A.D. 1860. The remaining 48 dates all appear to indicate feature construction prior to this date, with their mean and standard deviation suggesting construction mainly between ca. A.D. 1510 and A.D. 1760 (440–190 cal B.P.), or during the Late Prehistoric Marana Period (Bettinger and Taylor 1974). This is not to say that other unsampled features may not post-date these dates, only that making stacked-rock features at the site appears to antedate the arrival of Euroamericans in the region by some 200 years and therefore represents an aboriginal Paiute activity.

Given the tendency of ceremonial sites further afield to be in isolated, remote settings with commanding views (Chartkoff 1983; Dormaar 2003; Fredlund 1969; Goodwin 1997; Haynal 2000; Lowie 1958), the site's relationship to nearby alpine village sites and the surrounding landscape is perhaps as telling as its temporal context. It is within 3 km. of eight of the thirteen known White Mountains village sites, well within the daily foraging radius of late prehistoric populations in the greater central Sierra Nevada region (Morgan 2008). The nearest village site is only 195 m. southeast and downslope (but out of view) of Campo Borrego. A simple ArcGIS viewshed analysis (method and theory described in Connolly and Lake 2006, and Lake and Woodman 2003) modeled on a 1.5 m. tall individual standing atop the knoll in the center of the site (with a 360° horizontal view and a 180° vertical view) also indicates that none of the other nearby village sites are visible from Campo Borrego. Perhaps not surprisingly, this same analysis indicates that the principal peaks (White Mountain Peak, Mt. Barcroft, Piute Mountain, and Sheep Mountain) in the southern portion of the range are visible. Using the same parameters, but with the center of the village sites serving as viewshed origins, Campo Borrego is not visible from any of the main habitation sites in the area, and two of the principal peaks (White Mountain Peak and Mt. Barcroft) are occluded from habitation site views (Fig. 6).

In sum, the Campo Borrego site is large, contains a diverse assemblage of over 200 rock features, and is near and contemporaneous with the White Mountains village sites, suggesting it is a previously-unrecognized component of the White Mountains Village Pattern. It is secluded enough to be out of view of these habitation sites but still affords a good view of the principal peaks in the south-central portion of the range. The site's size, feature types, and feature frequency are anomalous for the Owens Valley region, but (as discussed below) not in terms of individual and isolated feature types often found in the Great Basin and in regions like the Plains, Mojave Desert, and especially the Plateau.

DISCUSSION

In and around the Great Basin, pits and stacked-rock features are not uncommon, and are most often interpreted as representing the remains of hunting-related facilities (*sensu* Smith and McNees 1999). For instance, pits excavated in talus resembling those found at Campo Borrego are often referred to as concealment pits or "pit blinds" that facilitated the ambushing of prey, especially pronghorn and mountain sheep (Frison et al. 1990; Kornfeld et al. 2010; Thomas 1982; Wilke 2013). In many instances, groupings of several pits are found together (Wingerson 2009); some may also have been used for storage (Thomas 1982). Similarly, linear, J- and U-shaped stacked-rock features were used as hunting blinds or as "dummy hunters" across the Great Basin, Sierra Nevada, and Rocky Mountains (Canaday 1997; Garfinkel 2006; LaBelle and Pelton 2013; Lubinski 1999). Linear arrangements of cairns and downed wood served as drive lines and, when clustered together, as impediments to ungulate movement through narrow drainages (Arkush 1986; Eakin 2005; Giambastiani and Sibley 2011; Hockett and Murphy 2009; Hockett et al. 2013; LaBelle and Pelton 2013; Pendleton and Thomas 1983; Petersen and Stearns 1992; Raymond 1982; Thomas and McKee 1974; Wilke 2013).

The problem with the features at Campo Borrego is that although they are morphologically quite similar to hunting features across the American West, they are grouped in a manner that would clearly not have facilitated communal drive-type hunting. The pits could certainly have been used to hide individuals or groups

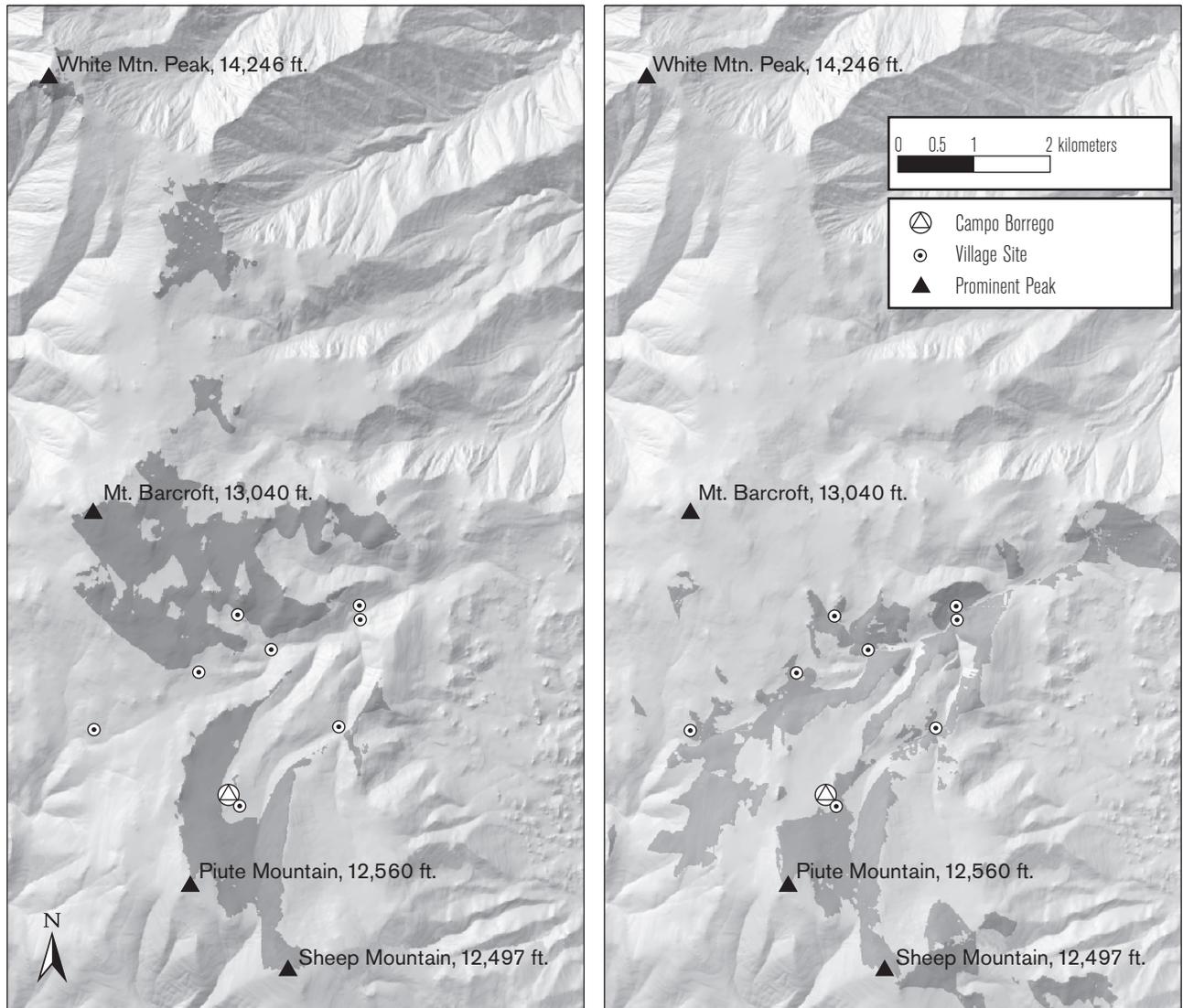


Figure 6. Viewshed analysis results. (Left) Viewshed from Campo Borrego; (Right) Viewshed from village sites. Dark areas indicate visible portions of the landscape; light areas are not visible from viewshed origins.

of hunters, but the cairns that might have been used to guide animals towards these pits are not arranged in the common line, V-trap, or funnel shape (Arkush 1986; Hockett and Murphy 2009; Hockett et al. 2013; Jensen 2007; Kelly 1964; LaBelle and Pelton 2013; Parr 1989; Pendleton and Thomas 1983; Wilke 2013). Rather, they cluster in a relatively small U-shaped pattern upslope from, rather than leading up to, the pits themselves (Fig. 4). This would clearly not have helped guide prey to concealed hunters. Further, almost all of the pits and stacked-rock walls are *within* the boundary formed by the cairns and propped rocks. In most hunting feature

complexes, blinds and ambush pits are found *outside* of these enclosures, ostensibly as means for concealed hunters to target corralled prey (Kornfeld et al. 2010; LaBelle and Pelton 2013; Wilke 2013). The arrangement of features at Campo Borrego stands in direct contrast to this pattern and its associated hunting behavior. Further, the use of perpendicular propped rocks rather than more expediently-constructed cairns is also an anomaly with regard to hunting features. It is conceivable that the pits and walls either pre- or post-date the cairns and propped rocks, and therefore may indeed represent hunting features that are functionally unrelated to these

other feature types. The apparent contemporaneity of the lichen dates from pits and cairns, however, suggests otherwise (Table 2), though it is possible the site was used at different times or seasons for different purposes (e.g., ceremony *and* hunting).

In contrast, in the southwestern Great Basin cairns are associated not only with hunting but also with ceremonial landscape use. This is most clearly expressed in the manufacture of cairns along trails and at other points on the landscape by the Southern Paiute and Chemehuevi of the Mojave Desert (Farmer 1935; Johnston and Johnston 1957; Kelly 1932–33; Kroeber 1925). While cairns in many cases appear to mark trails, the act of stacking the rocks to make the cairns is also associated with individuals seeking *puha*, of the same type (if not by the same method) sought by Owens Valley Paiute people (Arnold and Stoffle 2006; Fowler 2004; Stoffle and Zeneño 2001a, 2001b). Arguably, cairns and other stacked-rock features were also used in solstice ceremonies in the greater region (Hudson et al. 1979); the sheer frequency and distribution of cairns at Campo Borrego, however, is inconsistent with those at other purported solstice sites, many of which entail rock art rather than feature constructions (Freeman and Payen 1982; Hedges 1981; Walker 1985).

Farther afield, however, stacked rock features and cairns are attributed to vision quests undertaken to gain power or guidance (Lowie 1958). The quest itself entailed individuals seeking visions through fasting, prayer, and isolation, often in conjunction with puberty rites (Ray 1973). The use of such features is fairly common in the Great Plains and Rocky Mountains (Benedict 1985; Dormaar 2003; Fredlund 1969; Weimar 2009), but in the western portion of North America they are most clearly associated with the Plateau culture area, especially among the Penutian-speaking Klamath and Modoc of southeastern Oregon and northeastern California (Clarke 1843; Eidsness and Morgan 1997; Goodwin 1997; Haynal 2000). They are also found further west, for instance among the Yurok and Karok (Chartkoff and Chartkoff 1975) (Fig. 2). In Modoc territory, vision quest cairns were often built along trails but are also encountered as isolated features.

A typology of vision quest features was developed by Chartkoff (1983) for facilities he identified in Yurok territory in northwestern California (see also

Haynal 2000). It describes four main feature types somewhat analogous but by no means identical to those encountered in the White Mountains. The first are termed “prayer seats” or *tseksels*. These are 1–2 m. wide, single- to multi-course stacked-rock features most often found on high peaks or rock outcrops. They are three-sided or semicircular, with their openings usually facing east or northeast; they are often found clustered together. *Tseksels* were typically used by women healers seeking power, but also occasionally by men, sometimes with an assistant, seeking health, bravery, and the like. Such features are similar in size and construction to the variously-shaped walls found at Campo Borrego. The second type are termed “rock stacks” and are comprised of 1 to 4 usually flattish rocks piled atop one another. They are found most often along trails and far less often on mountain peaks; they are associated primarily with purification rituals. Though their construction entails more stacking than propping, these might roughly equate with Campo Borrego’s propped rocks and tabular cairns. The third type consists of cairns, described as jumbled stacks of 6 to 70 rocks (but averaging 14) found along peaks and trails, the former in association with *tseksels*. Of course, cairns dominate the feature assemblage at Campo Borrego. The last feature type consists of rock rings, which are only superficially similar to the two rock rings at Campo Borrego, given that the rocks comprising the ostensibly Yurok rings typically were not in contact with one another and were of single-course rather than multi-course design, as they are at Campo Borrego. Chartkoff encountered dating problems similar to those in this study, but made the claim that though some of these features may have been built in recent or historic times, their construction and use reflects continuity between prehistoric and ethnographic patterns. Similar temporal-cultural patterns pertain in the White Mountains and are supported by lichenometric evidence.

Vision quests, however, have not been recorded for the Owens Valley Paiute, who typically gained power and visions through less formal means. Steward (1933:308–309) makes it quite clear that “fasting, self-torture, lonely vigils etc. were not practiced” by the Owens Valley Paiute. But vision quests were practiced by other Numic-speaking Great Basin populations. Among the *Numa*, vision quests are documented among

the Northern Shoshone and Bannock (Lowie 1909), the Eastern Shoshone (Shimkin 1947, 1986), the Ute of Utah and western Colorado (Callaway et al. 1986), and the Southern Paiute and Kawaiisu of the Mojave Desert (Lowie 1923). Whitley et al. (1999a; 1999b) go so far as to claim that rock art and quartz crystals found with rock art in the Coso/northern Mojave region were associated with vision quests. Importantly, Lowie (1923) argues that Great Basin vision quests are found around the periphery of the Great Basin, likely indicating diffusion of this behavior from the Plateau and Great Plains (Fig. 2).

We do not mean to imply that Late Prehistoric Owens Valley Paiute people adopted feature types or vision-seeking ceremonial behaviors from the Plateau or elsewhere, but merely indicate the similarity of the features at Campo Borrego to vision quest sites in the greater region. We argue these similarities strongly suggest that the features at Campo Borrego were affiliated with ceremonial or ritual practices but remain equivocal as to exactly what types of ceremonies these were. This assertion is bolstered, somewhat surprisingly, by Steward himself, who notes that mountains and mountaintops like Mt. Dana and Birch Mountain in the Sierra Nevada were sources of *puha* for the Owens Valley Paiute (Steward 1933). He also notes that trapping eagles, a source of *puha*, was practiced in the mountains, ultimately implying the landscape and mountains in particular were embodied with (or rather simply were) *puha* (see also Stoffle and Zeneño 2001b). The fact that the site is at such a high elevation may also place it in cosmological proximity to the sky, the Sky People, and the sun, all critical elements of Great Basin religion and cosmology (Goss 1972; Vander 1997). That viewshed analyses indicate Campo Borrego is in an isolated location with views of the major peaks at least circumstantially suggests that individuals or small groups may have engaged in ritual practices in a manner akin to those undertaken by other Numic-speaking groups in the northern, eastern, and southern Great Basin. This ultimately implies that some sort of ritual behavior was practiced at Campo Borrego and that these behaviors were associated with the White Mountains Village Pattern. It further suggests that the region's ethnographers failed to record an important facet of high-altitude land use.

CONCLUSIONS

In summary, the quantity, diversity, types, and distribution of features at the Campo Borrego site argue strongly for a previously-unrecognized ceremonial component to the Late Prehistoric White Mountains Village Pattern. The site's isolated setting and viewshed provide circumstantial evidence supporting this assertion. The dearth of ethnographic information regarding the site and the behaviors it entailed may be the result of the practice passing from memory prior to Steward's fieldwork, deliberate avoidance of the topic by Steward's consultants (see Ferguson 2000:33 for a discussion of how esoteric cultural knowledge is often deliberately kept secret when Native American groups work with anthropologists), a lack of attention paid to behaviors other than hunting at high altitudes, or some combination of these factors. What is abundantly clear is that the White Mountains Village Pattern is atypical in terms of the hunter-gatherer archaeology of the mountains of North America, even when considered in light of a similar pattern documented at a single site in central Nevada's Toiyabe range. In this context, finding evidence for other regionally-anomalous behaviors like stacked-rock features linked to ceremonial or ritual practice perhaps ought not to be surprising—the White Mountains Village Pattern went largely unrecognized in the region's ethnographies as well and it took over half a century after these ethnographies were written before it was recognized by archaeologists. Whether these ritual behaviors articulated with the more “gastric” ones focused upon by Steward and much of the region's archaeological research (e.g., do they represent rituals associated with animal ceremonialism?) is of course open to question, but the evidence from Campo Borrego provides impetus for considering not only settlement and subsistence behaviors, but also the ceremonial and ritual aspects of high-altitude land use across the region.

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