# *Living on the Edge: Late Prehistoric Foragers on the South Range*

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**Abstract**

Our study area includes a substantial number of caves and rock shelters that were probably used variously, as temporary camps, single task sites, and workshops. Although we cannot know which of the sites were used simultaneously, it is possible that, in a good season, a number of family groups could have found sufficient shelter and resources in the region. Preliminary data lead us to the conclusion that Late Prehistoric and possibly earlier groups visited the broad alluvial valley and adjacent ranges south of Pilot Knob Valley, primarily for the purpose of seasonal hunting and gathering. The most challenging questions concern Seep Spring. Did people gather at Seep Spring for some sort of communal activities, was it used by individual shamans, or did its function change through time? Does the archaeological record reveal people consistently engaged in competition or in cooperation, or did pre-Numic competition give way to a Numic system of common pool resources, as the climate became dryer and the resource base sparser and less predictable?

## Study Area

Three prehistoric site complexes, all within less than a day's walk from each other, have been documented in the high country south of Pilot Knob Valley and north of Pilot Knob on the South Range (Fig. 1). Each cluster of sites is associated with a spring and each is situated in a separate geological formation that rises prominently from the low relief of the surrounding broad, alluvial valley, offering the shelter of rock overhangs and small caves (Fig. 2).

The northernmost complex, known as Bierman Caves, includes at least 18 sites dispersed over the southeastern slopes of Robbers Mountain and adjacent rhyolite dykes (Wells and Backes 2007). One of these, SBR-43/H, an open site, is located at Lead Pipe Spring. Two others, CA-SBR-1 and CA-SBR-2, overlook the spring from caves high in the adjacent ridges. CA-SBR-2, known as Lead Spring Cave, is a deep, funnel-shaped formation with a midden deposit that was completely excavated in 1949 by Al Mohr and Agnes Bierman (1949). The remaining sites, all but one of which are rock shelters, occur on the south side of the mountain, where they are separated from Lead Pipe Spring by high ridges. Prominent among this group is CA-SBR-8, which contains 17 rock art panels and a substantial midden (Fig. 3). Bierman and Mohr (Bierman and Mohr 1947-1949) conducted extensive excavations here as well. Several of the sites, including CA-SBR-8, contain surface rock features, either circles or low walls.

Farther south of Robbers Mountain, a north-south trending range of volcanic hills borders the west side of this wide, unnamed valley. Four sites, known as the Pothunter Spring complex, are located along the eastern foot of this low range (Fig. 4). These comprise five shelters, formed of volcanic breccia, that cluster tightly together at the spring.

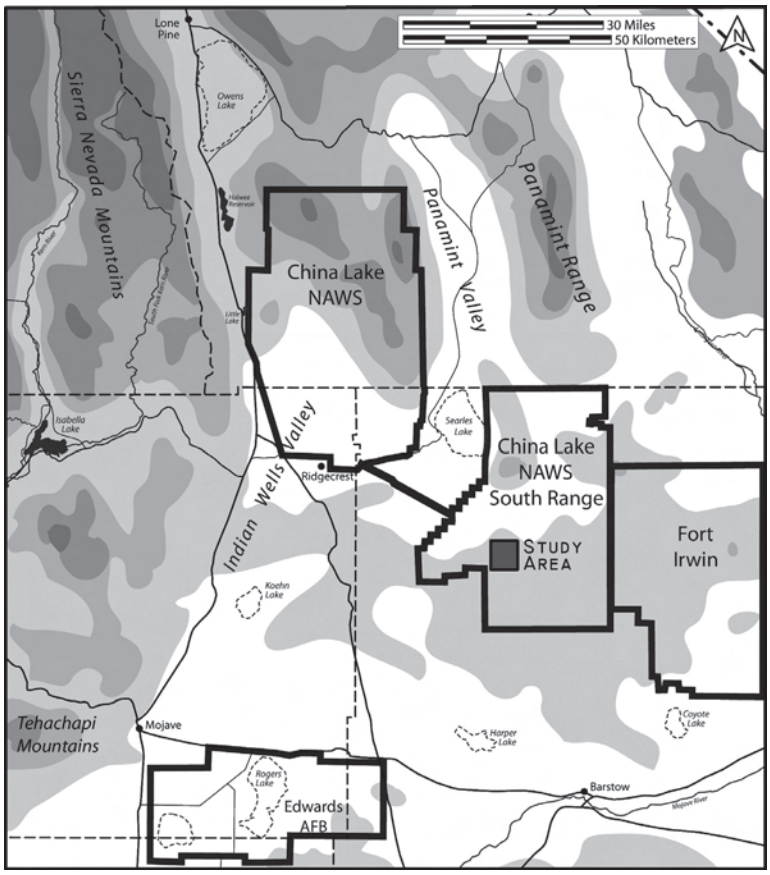


*Fig. 1. Regional location map.*

The largest of these, CA-SBR-47, contains several rock features on the surface. Originally recorded by Bierman and Mohr, these sites were test-excavated by Clewlow (1984), and subsequently a nomination form to list the site complex on the *National Register of Historic Places* was completed (Clewlow, Wells, and Backes 2004).

Southeast of Pothunter Spring and directly south of Bierman Caves, a series of rhyolitic tuff ridges combine into what appears to be a single sprawling U-shaped formation that dominates the local landscape. Water flows from seeps within the rock outcrops and the vegetation differs from the other complexes in that it includes willows as well as shrubs. Overhangs, small caves, and free-standing boulders are home to occupation sites, rock art, and bedrock milling features that are known collectively as the Seep Spring sites (Fig. 5) (Peck and Smith 1957; Walsh and Backes 2005a, 2005b). Three other shelter sites lie nearby, outside the main complex.

## Chronology

Because collections from early investigations at both Seep Spring and some of the Bierman Caves sites have not yet been located, temporal data for these complexes are limited. It appears, however that Seep Spring, Pothunter Spring, and at least one of the Bierman sites were visited or occupied at some time during the Gypsum period (4000–1500 BP). This is inferred from the presence of three Elko series points reported from Seep Spring (Walsh and Backes 2005b) and one each from the other complexes (Clewlow, Wells, and Backes

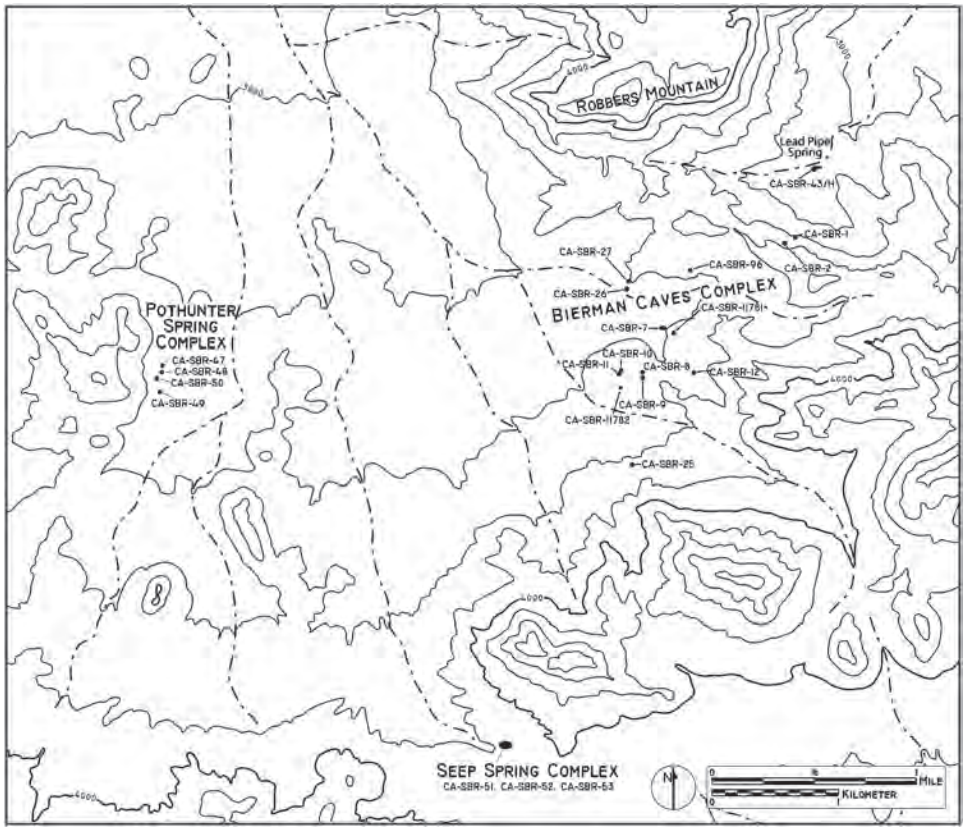


*Fig. 2. Study area map with complex and site locations.*

*Fig. 3. CA-SBR-8, in the Bierman Caves complex.*

*Fig. 4. The Pothunter Spring complex.*

*Fig. 5. The Seep Spring complex.*

2004; Wells and Backes 2007). A fluted point was found on the surface at Pothunter Spring, but may have been carried there by one of the later occupants of the site (Clewlow, Wells, and Backes 2004).

Evidence for the use of Seep Spring after 1500 BP includes the occurrence of arrow (rather than dart) shafts, as well as seven Rose Spring series projectile points (Walsh and Backes 2005b). Pothunter Spring and Bierman Caves yielded two Rose Spring points each. The type is usually considered indica-

tive of the Rose Spring period (1500–1000 BP), but the probability that Rose Spring points continued in use after 1000 BP in eastern California (Yohe 1992) continues to gain strength as obsidian hydration data accumulate.

Desert Side-notched and Cottonwood series points, both Late Prehistoric in age, outnumber earlier point types at both Seep Spring and Pothunter Spring, and Owens Valley Brown Ware occurs at all three sites. This observation, taken together with obsidian hydration measurements from the Seep Springs and Bierman Caves collections, leads us and our collaborators to the consensus that all three complexes were most intensively used after 1000 years ago (Clewlow, Wells, and Backes 2004; Walsh and Backes 2005a, 2005b; Wells and Backes 2007). Monastero's (2007, Monastero et al. 2006) investigation of CA-SBR-8 arrived at the same conclusion.

### Regional Settlement Patterns

Rose Spring and Late Prehistoric Village sites have not been documented in, or adjacent to, the study area in, either the archaeological, or the ethnographic record. During the Rose Spring period, semi-permanent settlements were located in the valleys along the eastern margin of the Sierra Nevada Range, where they were closer to the creeks and springs of the foothills, as well as to fall-ripening storable resources. In the southern valleys, these were restricted to acorns, while farther north, residents also had access to the pine nuts of the Great Basin ranges. Beginning about 2000 BP, climate change resulted in the filling of previously dry Koehn Lake, located southwest of our study area in the northern Fremont Valley, and possibly other basins as well. Excavations at CA-KER-875 on the shoreline of Koehn Lake revealed a substantial Rose Spring period occupation with subsistence based on lacustrine resources and hares (Sutton 1994:137, 1996:238–239). Based on his work there and in the adjacent portions of the Sierra Nevada Range, Sutton concludes that settlement was concentrated in the valley around the lake, with other areas used on an "ephemeral basis."

To the north, evidence from large settlements at Rose Spring (CA-INY-372), Coso Junction Ranch (CA-INY-2248) and Coso Hot Springs also suggests increasing sedentism during Rose Spring times, in contrast to the more mobile patterns of previous time periods (Sutton 1996:235; Whitley et al. 1988; Yohe 1992, 1998). A hypothesized increase in territoriality developed as villages close to the Coso Volcanic Field controlled access to obsidian quarries and exchange networks (Gilreath and Hildebrandt 1997:182).

During the subsequent Late Prehistoric period, however, the intensity of occupation at these large sites in the Rose Valley/Coso region declines (Whitley et al. 1988, Lanning 1963, Yohe 1992), while the number of seasonal seed collecting sites increases, reflecting a pattern originally proposed by Bettinger and Baumhoff (1982) in which Numic peoples began to exploit lower ranked resources. An increase in the number of seed collecting sites, along with a decrease in evidence for the obsidian trade, beginning 600/1000 BP, has been well-documented for the Coso Volcanic Field (Gilreath and Hildebrandt 1997:179). These changes may be related partly to a series of droughts that began about 1000 years ago, affecting much of the area east of the Sierra Nevada Range (Stine 1994).

Less is known, however, about the Late Prehistoric settlement pattern farther south and closer to our study area. Koehn Lake was apparently abandoned about 1000 years ago, most likely in response to the onset of drought conditions. Sutton suggests that the population may have moved from the desert into the Sierra foothills, establishing the ethnographic

Kawaiisu core area, while continuing to exploit seasonal desert resources in the area that was formerly occupied (Sutton 1994:137, 1996:239).

The question of whether seed collection intensified in this southern area, as it did to the north, still needs to be addressed. Based on their studies at China Lake, where seed processing appears to increase around 300 BP, Eerkens and Rosenthal (2002) suggest that while intensification of seed processing may have been a widespread Late Prehistoric pattern, it may have begun at different times in different areas.

## Ethnographic

The Numic-speaking Kawaiisu and Western Shoshone groups of southeastern California usually spent the winter close to the staple, storable crops that were harvested in the fall. For the Kawaiisu, this was primarily the acorn, and for the Shoshone, it was the pine nut. Fall and winter were the only times of sustained aggregation; from spring through summer individual families or family clusters foraged over a wide area collecting plant foods. According to Steward and other early ethnographers, formal band organization and distinct territorial boundaries were lacking among Western Shoshone groups in most areas of the Great Basin (Cappanari 1960; Harris 1940:39; Steward 1938, 1970; Thomas, Pendleton, and Cappannari. 1986:276), as they were for the Kawaiisu (Zigmond 1986:398, 405).

Other researchers contend that Great Basin groups were organized into formal bands prior to contact with Euro-Americans (Service 1962; Stewart 1966). A full discussion of this debate is beyond the scope of our paper (Clemmer, Myers, and Rudden 1999; Fowler 1966). Territorial boundaries between the Western Shoshone and other ethnolinguistic groups are, however, depicted in maps published by Steward (1938:Fig 1) and Stewart (1966).

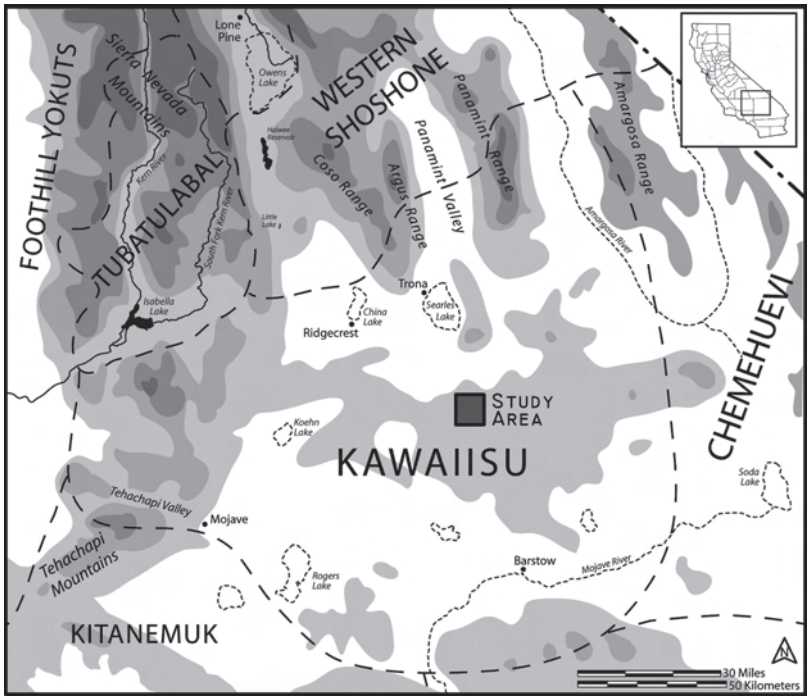


*Fig. 6. Map of ethnolinguistic territories.*

Our study area lies within the mapped foraging range of the Kawaiisu, as described by Steward (1938) and Zigmond (1986) (Fig. 6). While there is general agreement that the core of Kawaiisu occupation was in the southern Sierra Nevada/ Tehachapi region, Zigmond (1986:399) depicts an area of seasonal use that extends east of the Granite Mountains. Kroeber (1925:602) cites an account of a Kawaiisu group on the upper Mojave River and in the southern Panamint Range. Steward (1938:71; Fig. 1) also places the Kawaiisu in the southern Panamint Valley, the Argus Range, Trona, and an undetermined area to the south and west. He notes further that while the northern Panamint Valley was occupied by the Shoshone, Kawaiisu and Shoshone were mixed in the southern part of the valley and perhaps in the vicinity of Trona, which is the closest identified village location to our study area. This and other ethnographic and ethnohistorical evidence for a "Desert Division" of the Kawaiisu was recently reviewed by Earle (2003) and by Underwood (2006). Earle (2003:71–75) proposes that their territory may have extended as far east as present-day Fort Irwin.

During the Late Prehistoric period, regions such as our study area, probably were not suitable for semi-permanent settlement and most likely were used by small groups who spent the winter and fall close to their stores of fall-ripening resources. In the spring, however, this area offered Mojave Desert resources, including seeds, medicinal plants, and game, such as chuckwalla, that were not available in the northern and western mountain ranges. Traveling several days' walk from the main camp or winter settlement, whether that was in the Tehachapis, the Panamint region, or elsewhere, it was necessary to establish temporary camps. These were most likely near targeted plant stands and water sources that could replenish what was carried on the journey from previous camps or from the home village.

## Site Functions: Bierman Caves, Seep Spring And Pothunter Spring

*Local Environment.* Temporary camps with Late Prehistoric components have been identified in other areas of the west-central Mojave where local resources probably would not have supported multi-season settlement during most of the Late Holocene. Today, at Bierman Caves and Seep Spring, edible plants are available seasonally and are relatively abundant in years with above-average rainfall, such as occurred most recently in 2005. Vegetation at Seep Spring appears to be the most diverse, offering shade as well as economically important plants. Animal resources are not as evident today, but the significant quantities of faunal material from Lead Spring Cave (CA-SBR-2) (Mohr and Bierman 1949) and CA-SBR-47 at Pothunter Spring (Clewlow 1984), indicate that game was available locally when the sites were occupied. Some of the rockshelters in the Bierman Caves complex appear well-situated for observing the movements of game in the vicinity of Lead Pipe Spring, and the topography lends itself to game drive locations. Finally, toolstone was readily available. The local rhyolite was used to make both ground and flaked stone tools. Equally significant is the fact that Bierman Caves, Pothunter Spring, and Seep Spring each offered a combination of two resources that were of vital importance to foragers in the arid Mojave Desert—access to a reliable water source and shelter.

*Foraging Assemblages.* At Bierman Caves and Pothunter Spring, an abundance of milling stones and handstones made from the local rhyolite provides indirect evidence of the exploitation of seed-bearing plants. At Bierman Caves, some of these tools are extant on the sites, others are in the collections at NAWS, and additional specimens are listed on Bierman and Mohr's (1947–1949) site records. The unanalyzed collection from excavations at Pothunter Spring contains unidentified seeds and other

plant remains, as well as pine nuts which must have been brought from some distance (Clewlow 1984). Portable ground stone artifacts are also found at Seep Spring, but there the assemblage is dominated by handstones (Walsh and Backes 2005a). Bedrock mortars, not typically used to process the kinds of seeds that are native to the region, are present only at Seep Spring, but acorns as well as pine nuts were recovered from early investigations at these sites (Walsh and Backes 2005a).

Hunting tools and the debitage from their manufacture and repair are well-represented at all three complexes, along with faunal assemblages that have not been fully analyzed. As noted above, arrow shafts were recovered from Seep Spring. In the research design for further investigations at Pothunter Spring, Clewlow (1984) focused equally on animal and plant procurement systems. CA-SBR-47 at Pothunter Spring yielded cordage-wrapped wood from game snares and a large quantity of faunal remains, including large mammal, rodents, birds, and possibly reptiles. The flaked stone assemblages from all three complexes contain a diversity of artifacts that may include tools used in plant collection and processing, as well as butchering.

Sites within the Bierman Caves complex reflect considerable variation in intensity of use. CA-SBR-2, CA-SBR-8 and CA-SBR-26, for example, contain midden deposits, rock features, and a broad range of artifact classes. At others, the only cultural material consists of one or two grinding stones. The former are probably seasonal camps that were used repeatedly, while the latter may be either task sites that were used by the occupants of the other sites or overnight camps that might have been used only once. Likewise, at Pothunter Spring, there are differences in intensity of use or range of activities represented at individual sites within the complex, such as CA-SBR-47 has several rock features and yielded a large amount and wide range of artifacts and ecofacts, while CA-SBR-50 contains no features, has a shallow deposit, and yielded only a small quantity of flaked stone artifacts.

Flaked stone assemblages from several of the Bierman Caves sites, which were stored at San Bernardino County Museum and recently have been transferred to NAWS, were analyzed by Schroth and Kearney (2007), providing the most detailed information available on collections from our study area. CA-SBR-10 comprises two rock shelters, one of which contains a pictograph of a sheep. Schroth and Kearney (2007) classify this site as a temporary camp with evidence of biface production, point production and food preparation. In addition to debitage, the assemblage includes 82 bifaces, six core/cobble tools, representing equal numbers of scrapers and hand axes, and 21 flaked stone tools, of which 15 are scrapers, four are knives, and two are drill/reamers. Bierman and Mohr (1947-1949) also found grinding stones and manos at this site.

CA-SBR-11 is a rock shelter with anthropomorphic and zoomorphic pictographs. A collapsed rock feature is near the entrance. Schroth and Kearney (2007) classify this site as a small campsite with evidence of biface production and food preparation. The assemblage they analyzed includes 19 bifaces and biface fragments, 20 flaked tools, all of which are scrapers, and two core/cobble tools, as well as debitage. Additional artifacts in the NAWS Curation Facility include grinding stones, hammerstones, choppers, scrapers and three sherds of Owens Valley Brown Ware. During their 2004 survey, Ancient Enterprises, Inc. found two grinding stone fragments and one sherd of Owens Valley Brownware at this site (Wells and Backes 2007).

Schroth and Kearney (2007) classify CA-SBR-26 as a large, temporary camp where numerous activities took place, including biface reduction, point production, and food preparation. The only tools from

this site in the San Bernardino County Museum collection are two scrapers and one scraper plane, but Bierman and Mohr's fieldnotes list additional artifacts, including ceramics, projectile points, choppers, manos and metates. Several grinding stone fragments, fire-affected rock, and evidence of a midden deposit were observed by Ancient, Enterprises, Inc. in 2004 (Wells and Backes 2007).

Based on this limited evidence, we have interpreted these three site complexes as seasonal camp locations where water and shelter drew Numic peoples who had ventured some distance from their home settlements, seeking both game and seed plants. Walsh and Backes (2005a) in particular, considered the possibility of a "village" site at Seep Spring, but found the evidence lacking. They concluded that the sites were visited seasonally by "single family or small-band units" (Walsh and Backes 2005b). The midden deposits associated with these and several of the other sites, including CA-SBR-47, CA-SBR-8 and CA-SBR-2, most likely accumulated through repeated, rather than continuous, long-term occupation. These and some of the other larger shelters with a desirable location and exposure probably served as camps, while others were used for specific tasks or a single overnight stay.

*Rock Art.* No rock art has been found at Pothunter Spring, where the breccia lacks suitable surfaces for petroglyphs or pictographs, but the quantity and diversity of rock art at both Bierman Caves and Seep Spring suggest that one or both of these complexes may have been associated with ritual activity as well as foraging and toolmaking. The 214 petroglyph and pictograph elements recorded at Seep Spring appear to be rendered in several different styles, and some of these may be attributed to traditions associated with different ethnic groups. The area of the complex known as Locus A contains motifs common throughout the Mojave and southwestern Great Basin, as well as isolated Coso-style zoomorphs and polychrome anthropomorphs reminiscent of the Southern Sierra-style. Scratched elements, rare in the southern Great Basin, are present at four loci, but are concentrated in Loci G and

*Fig. 7. Abstract petroglyphs at Locus E, in the Seep Spring complex.*

I. Sometimes attributed to Late Prehistoric Numic arrivals who defaced the work of earlier peoples (Bettinger and Baumhoff 1982), these may instead be associated with cultures from outside the Great Basin. Locus I also contains "medicine bag" motifs that are well-known in Coso sites. Finally, Locus E is an isolated boulder with deeply incised elements, which, individually, fit within Great Basin style categories. As a whole, however, the panel is unique in its composition, and may represent the work of an artist from a distant culture (Fig. 7) (Walsh and Backes 2005:85–87).

The rock art at the Bierman Caves sites consists exclusively of pictographs. These are concentrated in the large shelter at CA-SBR-8, which contains 77 individual elements. An additional 13 elements were recorded at five other sites. The rock art in these caves is generally comprised of the "stick-figure" representational or amorphous abstract elements common in Mojave and Great Basin sites (Fig. 8), although two distinct cultural traditions may also be represented here. Several elements at CA-SBR-8 and CA-SBR-11 are similar to ethno-

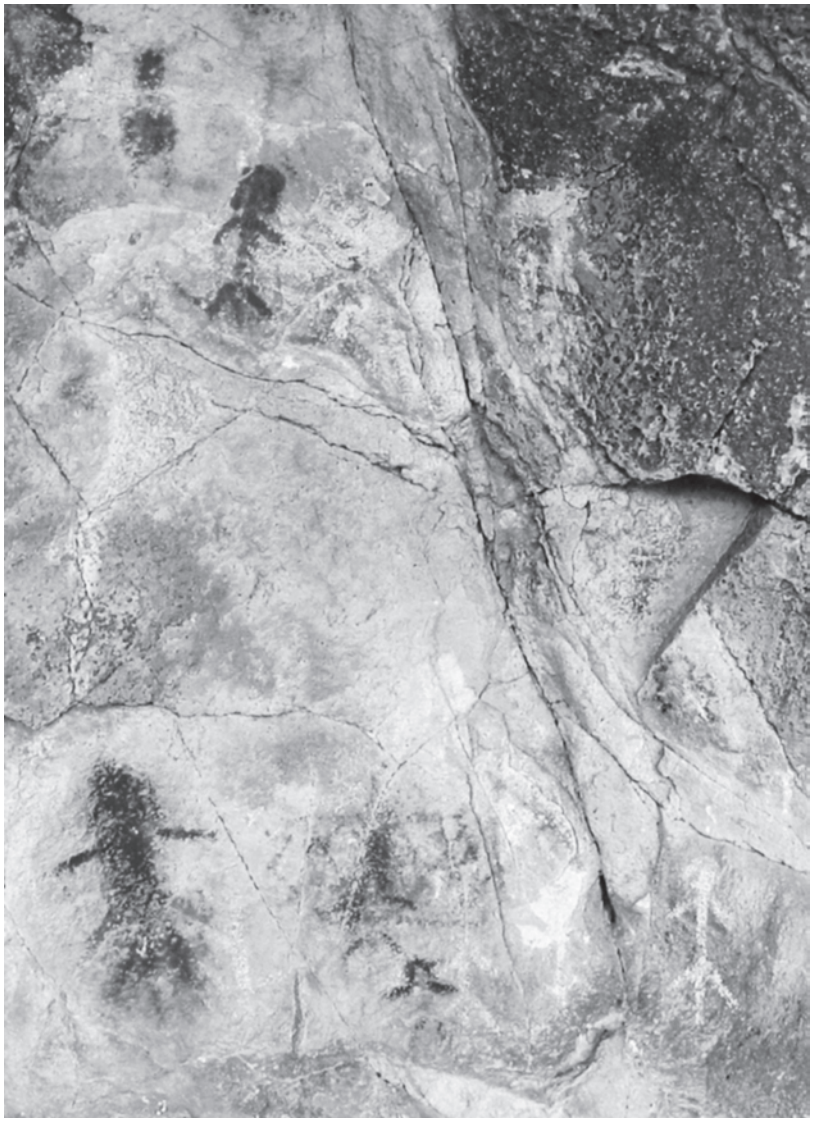

*Fig. 8. Representational pictographs at CA-SBR-8, in the Bierman Caves complex.*

graphic Kawaiisu rock art found in the Southern Sierra. At CA-SBR-10, in contrast, a large depiction of a sheep shows possible connections with the rock art of the Coso Range (Wells and Backes 2007).

The archaeological assemblages of Numic peoples tend to be indistinguishable unless they contain basketry, but in this situation, rock art may be a clue to identifying ethnic affiliations. Bierman Caves and Seep Spring may have been occupied by both Kawaiisu and other Numic groups. The tentative identification of other rock art traditions at Seep Spring suggests the possibility that pre-Numic and non-Numic groups were there as well. Reports of exotic ceramics at Seep Spring further support multiple ethnic affiliations for these sites. These include black-on-white sherds (Puebloan), red-on-gray sherds (Hohokam or Kumeyaay), and a possible corrugated sherd.

*Competition at Seep Spring.* Initially, Walsh and Backes (2005b) offered an interpretation of the Seep Spring sites as a "region under disputed tenancy." They proposed that the complex was visited sequentially by small groups who laid claim to it for seasonal use. The resources for which they competed were seed-bearing plants, a reliable water source, and the rock formation itself, which offers several caves and overhangs for shelter and a 360 degree view of the surrounding valley from its upper elevations. In this interpretation, evidence of competition is visible in the diversity of rock art styles, which are, in several locations, superimposed. Rock art may have been used to assert ownership or right of use for a particular group. This is an interesting idea and one that might be applicable to patrilineal/patrilocal bands or tribes (Service 1962). Given the available data on Kawaiisu and Western Shoshone social organization, as described by Zigmond (1986) and Steward (1938) respectively, and the exigencies of life in the Mojave Desert, however, we think this kind of competition would have been maladaptive.

## Steward's Model: Control of Natural Resources

*Food Resources.* According to Steward, group or individual control of natural resources was the exception, rather than the rule, among Numic peoples. The idea of property was found only in areas where seeds were planted and cultivated, as among the Southern Paiute and the Owens Valley Paiute. In the few areas where pine nut, mesquite, and screw-bean groves were claimed, he believed that the concept of ownership had developed from the practice of horticulture (Steward 1938:235). Even among these groups, claimed resource areas were not usually defended against others who wanted to use them.

With regard to non-cultivated seed gathering areas, specifically, anyone was free to use localities that were usually used by others;

> The sparse and erratic occurrence of vegetable foods required that territories exploited by different families and villages not only should vary from year to year but should greatly overlap. There was no competition for vegetable foods (Steward 1938:254).

According to Steward, this lack of competition extended outside the ethnolinguistic group in some areas. Fish Lake Valley and Owens Valley people both collected seeds in Deep Springs Valley without permission from the local residents (Steward 1938:60). Both Southern Paiute and Beatty Shoshone collected seeds at a place called Big Dune (Steward 1938:183).

Steward provides no specific information on claims, or lack thereof, to resource areas for the Kawaiisu. Like other Numic peoples, however, most Kawaiisu foraging activities were organized at the family level, with more than one family sometimes cooperating in food collection. According to Zigmond (1986:398).

The concept of territory was weakly developed, and the idea of boundary probably was nonexistent. There was recognition of a home base, but knowledge of regions and resources far beyond indicates that the people moved about to satisfy their needs (Cappanari 1960:135). Conversely, other groups were not likely to meet with resistance when they came into the Kawaiisu homeland in quest of essential commodities.

Dyson-Hudson and Smith (1978) argue that full-blown territoriality, or the exclusive use and defense of an area, is cost-effective only when critical resources contained in that area are sufficiently abundant and predictable. In areas such as the South Range, where resources are sparse and vary widely through time and space, interaction among groups in the forms of cooperative resource utilization (e.g. rabbit and antelope drives), land sharing, and information exchange may have been more efficient survival strategies. As Eerkens (1999) has proposed for the Fort Irwin region to the east, seed-gathering locations in the areas near territorial boundaries may have been shared by neighboring ethnic groups in a system known as Common Pool Resources. It is a system that has been described for foragers in other parts of the world and one that Eerkens finds consistent with Steward's descriptions of Numic concepts of non-ownership of seed tracts and other natural resources. Bierman Caves, Seep Spring, and Pothunter Spring are not located within a buffer zone between groups, but are near ethnolinguistic boundaries in that they are equally far from the documented winter villages of both the Kawaiisu and the Western Shoshone.

*Water.* Steward states repeatedly that, without exception, water sources were freely used by anyone (Steward 1938:74, 253; 1970:134). Citing Isabel Kelly's data on the Southern Paiute, Steward explains that even where a Kaibab group claimed a winter camp location at a water source, the water itself was available to others. The camp site itself belonged to a specific group only because they had planted a garden there (Steward 1970:134).

Steward's (1938:81) assertion that both Paiute and Shoshone visited Coso Hot Springs to obtain water for medicinal purposes is corroborated by ethnographic interviews from the 1970s (Iroquois Research Institute 1979:165).

In his assessment of Steward's model of sociopolitical organization, Thomas (1974:18) points out that open access to scarce resources is a widely documented practice among foragers in harsh environments. In arid environments, specifically, hunter-gatherers share water resources. Lee's (1976) study of the !Kung describes an area where eleven otherwise independent camp groups shared five waterholes, of which only two were reliable. In times of drought as many as seven groups would gather at one waterhole. Among the !Kung, as in the Great Basin, the Subarctic, and other harsh environments, flexibility of land use and reciprocity are necessary for survival (Lee 1976:82–90).

*Intergroup Conflict.* Steward's model of Great Basin sociopolitical organization has, of course, been challenged by other scholars, including Service (1962), Stewart (1966) and Crum (1994:116), who questioned Steward's assertions that Numic peoples lacked band organization and territoriality (Clemmer, Myers, and Rudden 1999). Archaeologists, in particular, have recognized that Steward also failed to adequately address environmental variability across the Great Basin and its relationship to differences in settlement patterns. These variations in environment and adaptation have since been identified and refined by archaeological studies (e.g., Bettinger 1991:70–73, Thomas 1983).

Other scholars have questioned the accuracy of Steward's characterization of Great Basin society as essentially peaceful (Sutton 1988, Walker 1999), but the specific data that are cited are from areas where these groups were in contact with non-Numic neighbors. Sutton (1988), specifically, has used ethnohistoric accounts of conflict along the margins of ethnographic Numic territory to argue that the Numa originally expanded by means of warfare.

Without addressing Steward's work or any other body of ethnographic data, Irwin (1980:30) asserts that warfare was a part of life in southeastern California. He does cite two incidents reported in the Kerr manuscript of violent conflict between Shoshone groups and trespassers, possibly Owens Valley Paiute, on their seed gathering areas at Haiwee Springs (Irwin 1980:38, 40). It is, of course, difficult to determine to what extent conflict and violence might have increased following encroachment by Euro-Americans on Shoshone and Paiute lands.

With regard to the Kawaiisu, however, no accounts similar to those reported by Kerr have been identified (Sutton 1988:65–66). According to Zigmond, warfare was unknown; the Kawaiisu maintained good relations with all their neighbors, participating at times with Tubatulabal, Yokuts, and Chumash in game drives in Yokuts territory (Zigmond 1986:399). Driver (1937) also mentions their friendly relationship with the Shoshone.

### Rock Art, Territories, and Communication

Because of its remoteness from any known prehistoric or ethnographic settlement, the region surrounding our three site complexes may have been frequented by groups coming from more than one direction in pursuit of desert resources. We can infer from the few plant remains in the collection that some of them had previously visited acorn and pine nut groves. The former suggests the Sierra Nevada and the latter could be from the north, northwest or east. Although we have addressed only the likelihood of Kawaiisu and Shoshone occupation, the three complexes are also close to the western most extent of the area that was used by the Chemehuevi, who ranged widely over southeastern California from their homeland near the California-Nevada border (Kelly and Fowler 1986:369, Fig 1). As noted above, the occurrence of Southwestern ceramics at Seep Spring suggests the possibility of additional connections to the east.

As Walsh and Backes (2005a; 2005b) have already proposed, the diversity of expression in the rock art at Seep Spring appears to reflect the varied identities of those who visited the site. And the fact of superimposition of rock art styles indicates that some if not all of these visits were sequential rather than concurrent. Stylistic analysis of the Bierman Caves pictographs also hints at the possibility that it was produced by more than one ethnic group (Wells and Backes 2007).

Many researchers who have investigated territorialism among prehistoric populations, including Numic groups (e.g. Dyson-Hudson and Smith 1978, Eerkens 1999, Thomas 1981, Whallon 2006) have emphasized the importance of inter-group communications in areas where a system of land sharing would be more advantageous than strict territorialism—specifically, in areas such as the South Range where critical resources were both sparse and unpredictable. The ability of foraging groups to efficiently coexist in this kind of environment could depend greatly on shared information about locations and conditions of distant resource patches. Communal hunts, such as the Great Basin antelope (pronghorn) and rabbit drives, and other seasonal meetings clearly provided opportunities for foragers to communicate face-to-face. In the Great Basin, the most important of these seasonal

events was the fall "fandango," held in or near the pinyon groves, where a larger group could be supported by an abundance of nuts and rabbits. (Irwin 1980:xiv-v, Steward 1938:46). The importance of these events in maintaining social ties and communication between families and groups generally has been understated in ethnographic accounts (Wells 1983:171–172). But with survival depending on the sharing of information related to resources spread over large, thinly populated areas, these annual or semiannual meetings, even when combined with chance encounters through the remainder of the year, may not have provided sufficient opportunities to share information.

A comparison of rock art forms among different site types within this study area suggests that some rock art may have served a communicative function related to subsistence resources. Such as rock art to mediate access, to advise others about the availability of resources in a particular area, or to provide a written record that resources in an area had already been visited and/or tapped out.

The Bierman Caves sites can best be described as the short-term but repeated habitations of foragers who generally exploited low-ranked resources. This describes the type of population that would benefit from a land- and resource-sharing system. The rock art found throughout the Bierman Caves and in Locus A at Seep Spring is exclusively painted, predominantly representational, easily visible during day-to-day activities, and generally found in association with milling equipment used in seed processing. These simple pictographs appear to have taken little time or energy to create, unlike petroglyphs or complex polychrome pictographs. Perhaps most notably, this rock art is dominated by "generic" elements that seem to have no specific cultural/linguistic affiliation: stick-figure anthropomorphs, zoomorphs, cloud- and sun-shapes, and simple lines. Motifs of these types are shared by all sociolinguistic groups known to have inhabited the region during the ethnographic period, which suggests that these symbols may have functioned equally among different groups.

In his discussion of common-pool resources, Eerkens (1999:311) maintains that coordination and management of joint land use systems may involve direct (i.e. verbal communication) or indirect means. A set of rock art symbols held in common among neighboring groups may have functioned as an indirect means of communication, disseminating information about local resource conditions and recent foraging activities, while at the same time mitigating the need for frequent face-to-face contact among groups. Future research might search for correlations between specific rock art elements and specific subsistence resources, whether they occur archaeologically or in the surrounding environment.

## Beyond Hunting and Gathering

Four of the five rock art loci at Seep Spring contain rock art in distinct "styles" which can, in some cases, be at least tentatively assigned to specific cultures. Motifs found in these loci include Coso-style medicine bags, deeply carved boulders in a style that resembles rock art in both northwestern Nevada and the Colorado River area, and scratched elements that are rendered in a technique seen most commonly in western Nevada, the Southwest, and Tataviam territory (Walsh and Backes 2005). These motifs are rendered as petroglyphs, are almost exclusively abstract, and are often hidden from public view; they are not associated with seed-grinding equipment, but in some cases are found near mortars that may have been used ritually or to process non-local resources.

The idea that the rock art at some of these sites may have been part of the performance of some ritual or rituals has not yet been fully explored. If Whitley

(1998:144–148, 2000:105) is correct in his assertion that most rock art in California and the Great Basin was produced by shamans, then the quantity of rock art at Seep Spring, and possibly even at CA-SBR-8, suggests a level of shaman activity that is surprising for an area that we have characterized primarily as a seed gathering and hunting area, frequented seasonally by small family groups. We do not necessarily agree with Whitley in his characterization of rock art as exclusively the province of shamans. In fact, in our focus on food, water, and shelter, we have thus far adhered to Steward's (1938:46) "gastric" model of Great Basin life, in which the food quest was primary (Meyers 1999:141–143). Walsh and Backes (2005) have taken economic explanations a step further in suggesting that the rock art was produced partly at least to support a claim to resources. The use of rock art to mark territorial boundaries and ownership is only one of several alternative explanations that do not invoke ritual (Quinlan and Woody 2003).

Recent critiques of Steward's ethnographic data focus less on questions of sociopolitical organization than on the cultural domains he tended to ignore in pursuit of a theory of cultural ecology. In Steward's view, "There were no group ceremonials, except as the round dance was thought incidentally to bring rain, crop fertility, or general well-being" (Steward 1938:45). In his dismissal of the role of myth and ceremonialism, some scholars consider that he misrepresented Numic culture as a whole (Crum 1999:123–124).

Like other foragers in many parts of the world, the Western Shoshone and other Numic peoples probably held group ceremonies that had both religious and social functions. Certainly, the emergence and rapid acceptance of the two late 19th century Ghost Dance movements, which originated with Numic prophets, suggests that group ceremonialism was not a new idea in the Great Basin. Garfinkel (2007:101) cites several ethnographic and historic accounts of the 1869 Ghost Dance in eastern California.

According to Hultkrantz (1986:634), the most important of precontact group rituals were those that marked the beginning of seasonal food gathering activities and included the performance of the Round Dance, which, he argues, was originally religious in nature, a statement with which Steward might have disagreed. In his ethnography of the Owens Valley Paiute, he describes this dance in some detail in secular terms (Steward 1933:320–323).

These group rituals occurred when larger groups came together, and they required sufficient food and water resources to support the aggregation. Large numbers of people usually came together only in connection with the antelope (pronghorn) drive, the rabbit drive and, most importantly, the pinyon harvest (Thomas, Pendleton, and Cappannari 1986:272). Of these three, the participation of a shaman has been well-documented only for the antelope drive. However, the fall festival or "fandango" may have had a religious component in addition to the important social functions that already have been discussed. Even Steward (1938: 237) mentions that among the Western Shoshone, festivals sometimes took place to "hold religious observances," in addition to dancing and gambling.

The Western Shoshone of eastern California practiced the Mourning Ceremony, as did the Kawaiisu (Zigmond 1986) and their California neighbors. Among the Western Shoshone, this rite was held in conjunction with the fall festival. In addition, according to Hultkrantz (1986:634), "first fruit rites," were held at these gatherings. Garfinkel (2006:124) has recently argued that fall festivals and mourning ceremonies among the Numa may also have involved animal ceremonialism.

Our study area is considerably more than one day's walk from the pine nut groves of the Argus and Panamint Ranges and beyond. Little information is available, however, on spring and summer ceremonies, beyond the fact that they existed. Steward (1938) mentions summer festivals for several central Nevada groups. Hultkrantz (1986:634) gives examples of spring rites that were held by Numic peoples in other parts of the Great Basin to increase fish and green plant resources. Garfinkel (2006:124) has suggested that a spring revival or world renewal ceremony, also involving animal ceremonialism, was part of the yearly cycle for Numic peoples in eastern California. Furthermore, he argues that it was connected in prehistoric times with the making of rock art. Garfinkel's primary interest is in a hypothesized sheep cult.

## Destination: Seep Spring

Our study area includes a substantial number of caves and rock shelters that probably were used variously, as temporary camps, single task sites, and workshops. Although we cannot know which of the sites were used simultaneously, it is possible that, in a good season, a number of family groups could have found sufficient shelter and resources in the region that extends from Lead Pipe Spring across the ridges and slopes of Robbers Mountain to Pothunter Spring and to Seep Spring in the south.

The possibility of ritual behavior is suggested at several sites that contain pictographs, but, based on quantity alone, such behavior appears significant only at Seep Spring and possibly at CA-SBR-8. Seep Spring is unique within our study area in the nature of the geological formation itself. There is sufficient space here, as well as numerous separate sheltered areas, within and outside the formation itself, to accommodate a much larger group of people for communal events, than at any other single location. In contrast to the Bierman Caves area, the water source occurs within the semi-enclosed space of the U-shaped formation. There are also a variety of surfaces suitable for rock art, both public and private, and Seep Spring is also unique in that it contains bedrock suitable for grinding paints, medicines or seeds for food.

In fact, the placement of some of the mortar holes at Seep Spring suggests an activity other than the mundane daily task of food processing, as they cannot be easily reached from a comfortable seated position. It is also possible that non-communal rituals, such as initiation ceremonies, were practiced at this site, because of the unique combination of the rock formation, the spring, and the bedrock boulders. Such locations in Luiseno and, possibly, in Cahuilla territory were used for girls' initiation rites, during which the initiates made pictographs and ground acorns (Shepard 1995). Walsh and Backes (2005a) considered and rightly rejected this possibility, because of an absence of data for the use of such locations and practices by the Numa. There is, in fact, very little ethnographic information on initiation rites among Numic groups, and what there is describes a much simpler ritual than was practiced by their neighbors to the south (Steward 1938:45; Thomas, Pendleton, and Cappannari 1986:270).

Seep Spring also appears to be unique among the sites in our study area in the range of exotic artifacts that are reported for the excavated assemblage. These include several Southwestern ceramics from at least two separate cultures that were contemporary with the Numic: Puebloan and Hohokam.

Such artifacts have been found at many sites in California, probably because of the activities of traders from the Mohave tribe on the Colorado River. Earle (2005) refers to these people as "traveler-traders" because their motives are not exclusively commercial, an observation that was initially made by Kroeber (1925:727).

That Numic visitors to Seep Spring obtained exotic ceramics from the Mohave is one possibility. That the Mohave themselves visited Seep Spring is another. The Mohave might have passed through this area on one of their trading expeditions that took place from spring through fall. Basing his research largely on J. P. Harrington's notes, Earle (2005:13) states that there were many locations between the Colorado River and the coast that held mythic significance for the Mohave. These include springs near Muroc Dry Lake southwest of our study area and the Avi Hamoka peaks in the Tehachapis. Seep Spring is not far south of the natural east-west corridor that follows Pilot Knob Valley. Earle (2003:89) suggests that a major historic trail that follows this route may follow an aboriginal trail (2003:89) that extends as far east as Leach Spring.

Preliminary data lead us to the conclusion that Late Prehistoric and possibly earlier groups visited the broad alluvial valley and adjacent ranges south of Pilot Knob Valley, primarily for the purpose of seasonal hunting and gathering. Family groups may have ranged widely over this valley in pursuit of game and seed-bearing plants or each group may have foraged near its own camp sites. Analysis of the faunal material in archived collections might answer the question of seasonality, which we have only inferred from environmental conditions and ethnographic accounts. Fragments of basketry, which are present in the collections, may identify ethnic affiliations that we have inferred from rock art styles. The most important questions, however, concern the relationships among the occupants of the different site complexes and it may not be possible to answer them. Did people from the sites on the southernmost slopes of Robbers Mountain visit Seep Spring for water or did they obtain it from Lead Pipe Spring? The presumed association with Lead Pipe Spring has been based on mapped distances and the constructs imposed by archaeological study areas. The most challenging questions concern Seep Spring. Did people gather at Seep Spring for some sort of communal activities, was it used by individual shamans, or did its function change through time? Does the archaeological record reveal people consistently engaged in competition or in cooperation, or did pre-Numic competition give way to a Numic system of common pool resources, as the climate became dryer and the resource base sparser and less predictable?

The behavioral ecology model of Numic expansion offered by Bettinger and Baumhoff (1982) holds that the Numic adaptation was a response to shortages in high-ranked resources that occurred sometime after 1000 BP. Although these shortages likely occurred to some degree throughout the Mojave region because of climate change, population pressure may have worsened resource depletion on a local level. Clearly, pre-Numic peoples had at times enjoyed relatively dense, predictable resources in certain areas such as Koehn Lake and Rose Spring. An area like Seep Spring, which even today is surprisingly lush for the region, might have practically been an oasis during the relatively wet, Rose Spring period. The pre-Numic people who used the spring might have been relatively populous and sedentary for a desert group, even if Seep Spring was only a seasonal camp. These conditions could foster group ceremonialism and/or territorial behavior, which would explain the large number of culture-specific petroglyphs at the site. In dryer Numic times, Seep Spring might have remained a destination for both seasonal foraging and seasonal gatherings, and a place where rituals were still performed, but with different functions. Future investigations at Seep Spring might investigate the archaeological deposits for evidence of ethnic affiliation, of feasting, of ritual, and of changing functions through time.

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