THE PRELIMINARY RESULTS OF THE 2008 ARCHAEOLOGICAL INVESTIGATIONS AT THE BEAD HILL SITE (KER-450), BUENA VISTA LAKE, CALIFORNIA

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The 2008 season of excavations conducted by the archaeological field class at California State University, Bakersfield (CSUB) focused along the northern periphery of the Bead Hill Site (KER-450), which is located in the southern San Joaquin Valley. CSUB has been undertaking research at KER-450 for more than a decade, and the recent preliminary results of the various analyses of this past season are largely consistent with earlier research, although some interesting trends have become apparent as a result of the current study.

Between the Elk Hills and the Sierra Nevada foothills in Kern County lies Buena Vista Lake Basin, an area that documents thousands of years of human occupation. Buena Vista Lake provided a great amount of subsistence resources to the natives that inhabited surrounding areas. The people that occupied this area practiced a primarily lacustrine subsistence while also exploiting a wide range of fauna, both lake and terrestrial.

Occupation in the area started around 8000 B.P. While occupation seems to have been continuous, there is a gap in the archaeological record between 7000 and 4000 B.P. The record starts again at 4000 B.P. (Hartzell 1992). It is possible that the area was abandoned or that sites occupied during that time period have not yet been found. More work is needed to determine the cause of the present gap.

Currently, work is being done at Bead Hill, KER-450, a site located in the southeastern portion of Buena Vista Lake Basin (Figure 1). This site is fenced and patrolled within the Aera Western Energy's South Coles Levee Ecological Preserve. However, CSUB students have been involved in salvage excavations of the site, due to damage caused by looting, road and fence construction, vehicular traffic, and a buried pipeline (Sutton 1996:49). In the spring quarter of 2008, archaeological excavations at Bead Hill yielded many artifacts and ecofacts. These artifacts and ecofacts were collected and transported to the archaeological laboratory at CSUB in order to be catalogued, analyzed, and curated.

Along with the work being done by CSUB students, questions about the function, age, settlement, and diet of the inhabitants of Bead Hill will be examined. It is hoped that the knowledge gained from this study will provide more data for the culture history and chronology of the Buena Vista Lake Basin.

ENVIRONMENTAL BACKGROUND

Buena Vista Lake Basin is located in the southern San Joaquin Valley in California. The Sierra Nevada borders the eastern part of the valley, the Tehachapi Mountains lie to the southeast, the San Emigdio Mountains are situated in the south, and the Temblor and Diablo ranges lie to the west of the San Joaquin Valley (Sutton 1997:3). Both the Buena Vista and Elk hills are located to the west of Buena Vista Lake and at the southern end of the Temblor Mountain Range (Sutton 1996:2).

The southern San Joaquin Valley is characterized by a Mediterranean climate and is extremely arid, usually receiving less than 13 cm of annual rainfall a year (Gifford and Schenck 1926:17; Sutton 1996:5). Moratto (1984:19) describes the climate of the San Joaquin Valley as "featuring but two seasons each year: mild, wet winters and warm, dry summers." Summers in the San Joaquin Valley are long and hot, with temperatures often rising to 38ºC.

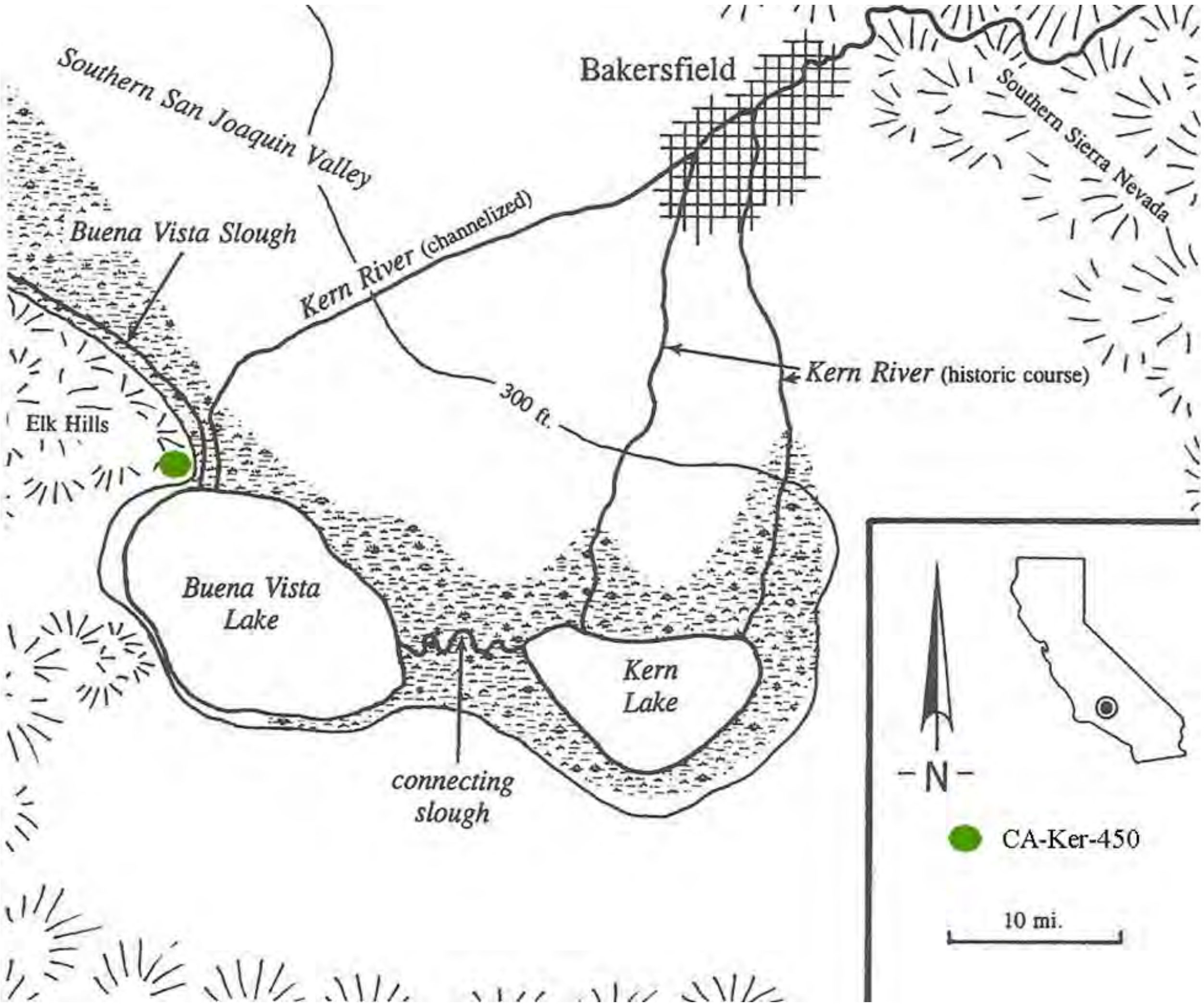

Figure 1. Site location of KER-450 (adapted from Sutton 1997:4).

This desert environment limited the variation of vegetation. Common perennial shrubs that are present in the southern San Joaquin Valley consist of saltbush (*Altriplex* spp.), tumbleweed (*Salsola kali* var. *tenuifolia*), and winter annuals. Other species include pickleweed (*Allenrolfea occidentalis*), glassworts (*Salicornia subterminalis*), and seep weeds (*Suaeda* spp.) (Sutton 1997:5).

While these plants were prevalent in the landscape, other species were used for resources far more often by the inhabitants of the San Joaquin Valley. For example, sage seed was most likely eaten (Gifford and Schenck 1926:18). Cattails (*Typha* spp.), spike rush (*Eleocharis* spp.), and sedges (*Carex* spp.) were also exploited (Sutton 1997:5). An extremely important plant resource was tule (*Scirpus acutis*). Tule was utilized to manufacture a wide array of goods. All parts of the plant were used; more specifically, "the pollen, seed, and root of the tule were eaten and the stem was used for hut construction, and for balsas and rafts" (Gifford and Schenck 1926:18).

While the vegetation available was rather limited, fauna in the area was quite diverse. Large mammals that inhabited the valley include tule elk (*Cervus elaphus nannoides*), pronghorn (*Antilocapra americana*), black bear (*Ursus americanus*), and grizzly bears (*U. arctos*) (Gifford and Schenck 1926:19; Sutton 1997:5-6). Although large mammals were present in the basin, smaller mammals were more abundant. Common small to medium mammals include black-tailed hare (*Lepus* cf. *californicus*), cottontail rabbit (*Sylvilagus audubonii*), coyote (*Canis latrans*), dog (*Canis familiaris*), fox (*Vulpes* spp. and *Urocyon* spp.), skunk (*Spilogale* spp.), badger (*Taxidea taxus*), squirrel (*Spermophilus* spp.), vole (*Microtus* cf. *californicus*), kangaroo rat (*Dipodomys* sp.), and mice (cf. *Onychomys* sp.) (Sutton 1997:6).

An even wider variety of fauna was available in areas closer to the lake. Along with terrestrial fauna that was present in the area, waterfowl were also important and played a major role in the subsistence of the people occupying the area around Buena Vista Lake. Some of the waterfowl that were exploited in the area consisted of:

> ...the white pelican, Farallon cormorant, avocet, killdeer, snowy plover, mountain plover, Bonaparte and California gulls, stilt, black-crowned night heron, great blue heron, Forster and black terns, western grebe, American bittern, American coot; lesser, white-fronted, Canada and Hutchins geese; curlew, snipe, and sandpipers [Gifford and Schenck 1926:19].

The remains of the waterfowl mentioned above are often collected from archaeological sites located in the vicinity of Buena Vista Lake (Sutton 1997:6).

A major food source came from the fauna in the lake itself. Within the lakes, rivers, and sloughs, vast amounts of fish were available throughout the year. Some of the common fish that were found in the San Joaquin Valley include

> ...Sacramento blackfish (Cyprinidae: *Orthodon microlepidotus*), Hitch (Cyprinidae: *Lavinia exilicauda*), Thicktail chub (Cyprinidae: *Gila crassicauda*), Sacramento sucker (Catostomidae: *Catostomus occidentalis*), Sacramento perch (Centrarchidae: *Archoplites interruptus*), and Tule perch (Embiotocidae: *Hysterocarpus traskii*) [Sutton 1996:9-10].

In addition to the exploitation of fish by the local inhabitants of the Buena Vista Lake area, river mussel (*Anodanta oregonensis*), which is a mollusk, was heavily exploited and readily available in the Kern River (Gifford and Schenck 1926:18).

Pacific pond turtle (*Clemmys marmorata*) was also found throughout the San Joaquin Valley. Turtles were widely utilized by Yokuts tribes; Gayton (1948:14) mentions that "turtles (tu'nkot) were plentiful, they were stabbed under the throat with a sharp stick, put on hot coals, and roasted; then the shell was broken off and the larger entrails were discarded." The faunal assemblages recovered from archaeological sites located in the Buena Vista Lake region often are composed of all the fauna mentioned above (Sutton 1997:6-7).

ETHNOGRAPHIC BACKGROUND

The Native Americans that inhabited the San Joaquin Valley are known as the Yokuts. There were more than 40 Yokuts tribes throughout the valley. In the southern San Joaquin Valley, the Southern Valley Yokuts resided. The Tulamni, a Southern Valley Yokuts tribe, lived around the Buena Vista Lake and Slough (Wallace 1978:449).

The Tulamni typically lived in near-permanent villages along lakes, sloughs, and rivers. Permanent villages were comprised of communal dwellings called *kawi*, which typically housed up to 10 families (Hartzell 1992:113; Wallace 1978:451). However, single-family dwellings were also common. Single-family dwellings were generally oval-shaped huts that were aligned in a single row. Both the *kawi* and single-family huts were made out of tule mats. These dwellings housed up to 350 people and were either arranged as one large village or as several smaller settlements that were grouped around one village that was larger and dominant (Kroeber 1967:352; Wallace 1978:454). The total population of the Yokuts has been calculated by several investigators. One of these investigators was Martin A. Baumhoff, who calculated the Buena Vista Yokuts population size and density in 1963. He concluded that there was one person per mi^2 (2.5 per km^2), totaling a population of 4,000 (Hartzell 1992:119).

The Tulamni had a mixed economy. Fishing, hunting waterfowl, and collecting plant resources and shellfish were the major features that characterize their subsistence (Wallace 1978:449-50). Tule seeds and bulbs and mussels were gathered. Rabbit, elk, pronghorn, and antelope were hunted communally with large numbers of people (Hartzell 1992:119). Waterfowl were hunted with arrows or snared. Fishing was generally done by netting, either dragged by a raft or by hand (Sutton 1996:13; Wallace 1978:450). However, the Yokuts were also known to poison fish in small streams or pools (Kroeber 1967:376). Fish, seeds, and other economic resources would be stored in mat-covered granaries that were raised off the ground (Wallace 1978:451).

As mentioned earlier in this paper, tule was an important commodity that served multiple functions. Roots and seeds were used for mush and meal, while the stalk provided material for making baskets, mats, and canoes. Basketry included conical baskets, flat winnowing trays, seed beaters, and necked water bottles (Sutton 1996:12; Wallace 1978:451). Tule was utilized to manufacture balsas, or rush rafts, that were used not only for fishing but also for river crossings (Kroeber 1967:373).

Local sources were available for tool manufacture. Tabular cherts, steatite, and asphaltum were available around Buena Vista Lake Basin (Hartzell 1992:19). While there were local materials, there is evidence of trade for obsidian and marine shells. Even though Buena Vista Lake Basin was arid, there were no difficult obstacles that prevented access to and from the area. The Tulamni traded with the Chumash to the west and Uto-Aztecans to the south, with travel taking anywhere from three to seven days (Gifford and Schenck 1926:16-17).

HISTORICAL RESEARCH AND ARCHAEOLOGICAL DATA

Historical data for the region begin with the Spanish missionaries entering the San Joaquin Valley. The Spanish kept records of populations, villages, and cultures. While multiple accounts were recorded, one has been selected to describe the region of interest. In 1806, Fray Zalvidea came through Buena Vista Basin via Cuyama Valley. He noted that populations were concentrated around the lakeshore. He found only two villages with around 500 inhabitants, which is similar to what the archaeological and ethnographical accounts describe (Gifford and Schenck 1926:23).

Besides historical data, there have been several archaeological investigations in Buena Vista Lake Basin, a few of which are discussed here. Starting in 1933, Waldo Wedel excavated sites located on the southeastern edge of Buena Vista Lake. The summary of his findings for his site, Site 1, represent subsistence heavily reliant on lake and near-lake environments. Fish and freshwater mussel represented the greatest portion of dietary remains. Avifauna was also greatly utilized, with coot as the dominant species. A hearth was used to obtain a radiocarbon date of 1200 ±160 B.P. (Hartzell 1992:182). This date was supported with the finding of two Cottonwood series triangular concave-base projectile points, which date between 650 B.P. and historic times in the Great Basin and after 950 B.P. in the Mojave Desert (Hartzell 1992:175).

In 1935, Edwin Walker excavated a Yokuts cemetery (KER-64) located at Elk Hills (Walker 1947:3). A large number of burials were identified by Walker. Graves were marked by juniper posts, and the burials were also accompanied by accoutrements. Some individuals were interred with aboriginal artifacts. Others were interred with a combination of both aboriginal and European goods (Walker 1947:5-8). Based on the examination of the material culture recovered from the burials and the fact that KER-64 is located near KER-450, Walker believed that the burials represented the people of the Tulamni village (Walker 1947:14)

David Frederickson also excavated in the area, at KER-116, in the 1960s. This site dates from 8200 ±400 B.P. to historic times, based on radiocarbon-dated clam shell. Frederickson's findings for dietary remains were the opposite of Wedel’s, with mammals being the most common and birds being least common. However, coot was still the most prevalent bird exploited. It has been suggested that the difference in faunal remains was skewed due to the use of 6-mm (1/4-in.) mesh sampling screens (Hartzell 1992:254). This mesh would have been too large, and the fish bone would have slipped through it. Despite the lack of fish bones, new information about the area was gained. Turtle had been a presumed resource; however, there had been a lack of archaeological evidence. At KER-116, a high percentage of burned and fragmented turtle carapaces were found, which are indicative of cooking turtles over a fire and smashing the shell to collect the meat (Hartzell 1992:260).

While the previous sites were in the vicinity of Buena Vista Lake, there has also been previous research specifically at KER-450. From November 9, 1969 to January 24, 1970, John Dieckman excavated the site of Bead Hill. Dieckman (1977:49) wanted to determine whether or not the site was the Yokuts' Buena Vista Village (Tulamniu) that had been previously described in historical accounts. Dieckman also wanted to determine the extent of damage at the site. A variety of indigenous artifacts, such as shell beads, pottery, stone milling implements, and projectile points, were recovered. Ammunition, buttons and other European goods were also recovered from KER-450 (Dieckman 1977:51-52). In conclusion, based on the numerous artifacts found and ethnographic records, Dieckman determined that KER-450 was the village of Tulamniu (Dieckman 1977:42; Sutton 1996:20).

RESEARCH METHODS

Field Methods

Eight 1-by-1-m test units were excavated, and the excavated matrix was sieved through 3 mm (1/8-in.) mesh screens. Digging was conducted in arbitrary 10 cm levels until sterile soil was reached. The focus of this paper will be on four of these units, TU-0901, TU-0905, TU-0908, and TU-0909. These units were placed outside of the looted zone in an attempt to concentrate excavations in undisturbed areas.

Laboratory Methods

The laboratory analyses were conducted at the archaeology laboratory on the CSUB campus by the students in the Archaeological Laboratory Methods class. Dirt was gently brushed off the surface of every artifact and ecofact. No washing was done. Debitage was sorted into material type, counted, weighed, and catalogued. A separate debitage analysis form was completed in order to assess each flake’s technological attributes. Beads received their own catalog numbers and had the appropriate measurements and weight taken. All artifacts were examined to determine function and temporal sensitivity. In addition, faunal remains were separated into either mammal/bird or fish, counted, weighed, and catalogued. Further speciation of the faunal specimens was performed, if possible. Dr. Kenneth Gobalet at CSUB analyzed faunal remains classified as fish. A special analysis of cross-over immunoelectrophoresis (CIEP) was also conducted by the Laboratory for Archaeological Science (LAS) at CSUB.

RESULTS

A total of 158 artifacts were recovered, most of which consists of debitage (73.4 percent) that resulted from various stages of manufacture. Other artifacts recovered consist of a single projectile point, a core, ground stone, fire-affected rock, and beads (Table 1).

Table 1. Artifact types, by level.

Artifact	Level (cm)				Total
	0-10	10-20	20-30	30-40	
Projectile Points	-	1	-	-	1
Core	-	-	1	-	1
Debitage	15	26	43	32	116
Ground Stone	-	-	1	1	2
Beads	7	16	8	5	36
Fire-Affected Rock	-	1	1	-	2
Total	22	44	54	38	158

Figure 2. Cottonwood projectile point and most common Olivella *beads.*

Flaked Stone Artifacts

Projectile Point

A fragmented chert projectile point was recovered from the 10-20 cm level of TU-0909 (Figure 2). The proximal end of the projectile point remains intact; thus, the projectile point was typologically identified as a Cottonwood Triangular point in the Desert series. Since the projectile point is fragmented, the only measurable attributes that were taken included the maximum base width (15.75 mm), weight (0.98 g), and thickness (3.18 mm). The Cottonwood Triangular point was produced from a secondary decortication flake.

Core

A multidirectional chert core exhibiting signs of cortex was recovered from the 20-30 cm level of TU-0909. The weight of the core is 58.91 g. It exhibits no evidence of battered or polished edges, which suggests that the purpose of the core was for supplying flakes.

Table 2. Technological attributes for debitage.

Technological Attribute	Level (cm)				Total
	0-10	10-20	20-30	30-40	
Bipolar Core Reduction	2	-	5	6	13
Flakes	6	18	23	20	67
Shatter	7	8	15	6	36
Total	15	26	43	32	116

Debitage

A total of 116 pieces of debitage were recovered from the four selected units (Table 2). The majority of the debitage consists of flakes (69 percent, n = 80), followed by shatter (31 percent, n = 36). The majority of the debitage is cryptocrystalline (98 percent). The 20-30 cm level had the greatest amount of debitage (37.1 percent, n = 43). The production of debitage decreased over time.

Further technological attributes were noted for all of the flakes. Out of the 80 flakes recovered, no primary flakes were identified. The majority of the flakes are secondary decortication and tertiary flakes. Secondary decortication flakes constitute 28.8 percent (23 flakes) of all the flakes recovered from the site and make up 19.8 percent of the total debitage. However, the majority of the flakes (71.3 percent, n = 57) are tertiary or noncortical flakes. Tertiary flakes compose 49 percent of the debitage subassemblage. Bipolar core reduction was also observed (11.6 percent, n = 13). Overall, the flakes recovered from KER-450 consist of both early reduction phase flakes (52.5 percent, n = 42) and late reduction phase flakes (47.5 percent, n = 38).

Ground Stone

Metate

In the 20-to-30 cm level of TU-0909, a fragmentary portable schist metate was recovered. The three fragments weighed 175.75 g. No other metric measurements were taken, since the form of the portable metate could not be reconstructed. It was also observed that the surface of the fragments had been ground, thus being selected for CIEP analysis.

Mano

A complete unifacial mano was recovered from the 30-40 cm level of TU-0908. The mano is oval-shaped and is manufactured from rhyolite. The length is 98.14 mm, the width is 85.11 mm, and the thickness is 51.10 mm.

Protein Residue Analysis (CIEP)

Five samples were submitted for protein residue analysis. These samples included the mano, the Cottonwood Triangular point, and the three metate fragments. The proteins extracted from these five artifacts were tested against bear, bovine, cat, chicken, deer, dog, human, rabbit, rat, sheep, and trout/salmon antisera. No positive reactions were registered in the analysis. This could be due to poor preservation of protein, insufficient protein, or the artifacts were not in contact with any of the organisms tested for with the antisera.

Shell Beads

A total of 35 O*livella* shell beads were recovered (Figure 2). Based on the metric attributes and visual inspection of each shell bead, the beads were typed following Bennyhoff and Hughes' (1987) shell bead typologies for California and the western Great Basin. Nine different typological classes characterize

Table 3. Bead types by level.

BEAD TYPE	LEVEL (CM)				TOTAL
	0-10	10-20	20-30	30-40	
A1a Small Spire Lopped	1	-	-	-	1
D1a Shelved Punched	-	1	-	-	1
G1 Tiny Saucer	4	2	1	-	7
G2 Normal Saucer	1	3	1	3	8
G3 Ring	-	-	-	1	1
K1 Cupped	-	3	4	2	9
K2 Bushing	1	5	1	-	7
K3 Cylinder	-	1	-	-	1
Total:	7	15	7	6	35

all the recovered *Olivella* beads (Table 3). *Olivella* beads exist in greater numbers in the 10-20 cm level. K2 Bushing beads are dominant in the 10-20 cm level. The most common bead type at the site was the K1 Cupped bead; there were a total of nine. G1 Tiny Saucer and G2 Normal Saucer beads are also common. G2 Normal Saucer beads are the only beads that were present during every period of occupation at the site.

In addition to *Olivella* shell beads, a single steatite bead was recovered from TU-0909; the steatite bead was found in the 20-30 cm level. In California, disk-shaped steatite beads occur in late prehistory, protohistory, and early historical archaeological contexts (Schneider 2006:86). The steatite bead is 1.93 mm thick and has a perforation diameter of 1.95 mm. The width of the bead is 5.57 mm, and the weight is 0.10 g. Both *Olivella* shell beads and steatite beads are believed to have been used by the Yokuts as money or for ornamentation purposes (Schneider 2006:86; Wallace 1978:451).

Fire-Affected Rock

Two pieces of fire-affected rock were found in the 10-20 and 20-30 cm levels, weighing 37.09 g and 16.96 g, respectively. The tarring pebble from the 20-30 cm level still has remnants of asphaltum on its surface. Part of the pebble has popped off, presumably due to heating. Therefore, this piece of fire-affected rock could be a possible cooking stone**.**

Faunal Remains

Invertebrates

The only invertebrates recovered from the site were river mussels (*Anodanta oregonensis*). They constitute the majority of the faunal assemblage at every level (97 percent). The level with the greatest amount was the 20-30 cm level, with 49 percent (677.65 g) of the shellfish remains.

Vertebrates

A wide range of vertebrates was exploited by the inhabitants of KER-450. Vertebrate remains were separated into two groups: mammal/bird and fish. While mammal/bird faunal remains were further analyzed, fish remains were only counted and weighed, due to their separate analysis by Dr. Goblet. The mammal and bird remains were highly fragmented. However, some elements and taxa were identified, including *Clemmys marmorata*. The fragmented bone and elements were categorized into large mammal, small mammal, bird, and rodent (Table 4).

Small mammal made up the majority of vertebrate fauna (41.60 percent, 15.1 g). Turtle and fish were also common (27.22 percent, 9.88 g; and 23.14 percent, 8.4 g). The amount of all faunal data decreases over time.

Table 4. Faunal remains, by weight (g).

TAXON	LEVEL (CM)				TOTAL
	0-10	10-20	20-30	30-40	
Turtle	1.48	3.10	3.43	1.87	9.88
Bird	-	-	0.95	1.35	2.30
Fish	-	0.31	5.37	2.72	8.40
Shell	182.48	233.35	677.64	285.08	1378.55
Small Mammal	0.75	1.59	6.28	6.48	15.1
Large Mammal	-	-	-	0.57	0.57
Rodent	-	-	0.05	-	0.05
Total	184.71	238.35	693.72	298.07	1414.85

Table 5. Thermal alteration to faunal remains.

LEVEL (CM)	AMOUNT BURNED	BURNED WEIGHT (G)	AMOUNT UNBURNED	UNBURNED WEIGHT (G)	TOTAL WEIGHT (G)	TOTAL AMOUNT
0-10	-	-	19	2.23	2.23	19
10-20	3	0.59	19	4.08	4.67	22
20-30	61	4.28	44	5.78	10.06	105
30-40	32	2.63	63	7.99	10.62	95
Total	96	7.50	145	20.08	27.58	241

Table 6. Fish remains, by level.

LEVEL (CM)	TAXON	ELEMENT	NISP	TOTAL
0-10	-	-	0	0
10-20	*Archoplites interruptus*	vertebrae	5	6
	Cyprinidae	vertebra	1	
20-30	Actinopterygii	fragments	7	42
	Archoplites interruptus	vertebrae	26	
	Archoplites interruptus	spine	2	
	Castostomus occidentali	vertebrae	3	
	Cyprinidae	vertebrae	4	
30-40	Actinopterygii	fragments	7	28
	Archoplites interruptus	vertebrae	11	
	Castostomus occidentali	vertebrae	6	
	Cyprinidae	vertebrae	4	
Total				76

Thermal alteration was also noted during the speciation of the faunal remains. Bone was classified as burned or unburned (Table 5). Every level had more unburned bone, totaling 72.81 percent (20.08 g). However, there is less burned bone in the highest levels (7.87 percent of burned bone, 0.59 g).

A separate fish analysis was administered by Dr. Kenneth Gobalet of the Department of Biology, CSUB. Fish species identified included Cyprinidae, Sacramento sucker (*Catostomus occidentalis*), Sacramento perch (*Archoplites interruptus*), and Actinopterygii (Table 6). The trend is similar to the other vertebrate and invertebrate fauna, with remains decreasing with time. NISP was used to quantify the fish. The 20-30 cm level had the greatest amount of fish, with 42 distinctive elements. The most common species at the site was Sacramento perch (57.89 percent, n = 44).

Shell, fish, and turtle combine to account for almost 98.72 percent of the total faunal remains, suggesting that the inhabitants of KER-450 relied heavily on lacustrine resources. Small mammal, large mammal, and bird make up the remaining 1.27 percent, which suggests a relatively small reliance on terrestrial resources.

Plant Remains

Plant remains from the site consist of charcoal. A total of 46.65 g of charcoal was collected from the four selected units. The amount of charcoal recovered from the site decreased over time. The 20-40 cm levels had over half of the charcoal (38.29 g). The 0-20 cm levels exhibited a sharp declined in the amount of charcoal (8.36 g).

Asphaltum

Two asphaltum fragments, weighing 4.33 g, were collected from the 20-30 cm level. Both pieces of asphaltum were covering pebbles. According to Wedel, pebbles were covered with asphaltum, heated, and used to waterproof baskets. The heated stones would help evenly distribute the asphaltum by being swirled around the inside of the basket (Wedel 1941:39).

Dating

No radiocarbon dates have been reported for KER-450. The only other date was supplied by Dieckman, who concluded that the upper portion of KER-450 was used “during the period of Spanish contact until as late as 1860” (Dieckman 1977:49). For an absolute date, a radiocarbon sample of a charcoal clump with matrix was collected from the 20-30 cm level and stored appropriately until further analysis is possible. However, occupation for the site was determined through relative dating. Occupation was inferred through the typing of *Olivella* shell beads. These beads date from the last phase of the Early period to the second phase of the Late period. In California, the Early period dates between ca. 8000 and 4000 B.P., while the Late period dates between ca. 1500 B.P. and historic contact (Sutton 1997:12). These dates also correlate with the vertical distribution of the units. Another temporally sensitive artifact that was employed to relatively date the site was the Cottonwood Triangular point. The Cottonwood Triangular point found in the 10-20 cm level is believed to date to the Late Prehistoric period (Heizer and Hester 1978:165-166; Justice 2002:368). Further research will serve to clarify the time period(s) when KER-450 was occupied, but at this time it appears that the site was primarily occupied during the Late Prehistoric period, within the last 1,000 years.

CONCLUSIONS

Based on the types of debitage recovered, the function of Bead Hill during the occupation represented by the selected units was not as a quarrying area. If the site had been a quarrying area, primary decortication flakes should have been recovered. Instead, the majority of flakes are interior flakes (72.2 percent) and secondary decortication flakes (28.8 percent), followed by shatter (31 percent) and bipolar core reduction flakes (11.61 percent). This suggests that raw materials were reduced elsewhere and transported to the site as bipolar cores. Transporting raw materials can be suggestive of trade or seasonal mobility.

Coupled with the amount of charcoal from the site, the amount of thermal alteration suggests that cooking of the faunal remains was a common activity at this location, with an emphasis on lacustrine resources. This supports the findings of Sutton (1996) and Hartzell (1992).

In addition, based on the analysis of artifact types, it is concluded that KER-450 was perhaps a temporary habitation site that was occupied late in prehistory. The 20-30 cm level cosistently shows the most activity, as seen through the amount of debitage and faunal remains, indicating that this was a period of intense occupation. The time following this period exhibits a decrease of material culture, indicating a gradual decrease in site use.

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REFERENCES CITED

Bennyhoff, James A. and Richard E. Hughes

1987 *Shell Bead and Ornament Exchange Networks between California and the Western Great Basin.* Anthropological Papers of the American Museum of Natural History No. 64(2). New York.

Dieckman, John J.

1977 Buena Vista Village: Tulamniu. *Kern County Archaeological Society Journal* 1:49-53.

Gayton, Anna H.

1948 Yokuts and Western Mono Ethnography. *Anthropological Records* 10:1-302. University of California, Berkeley.

Gifford, E. W., and W. E. Schenck

1926 Archaeology of the Southern San Joaquin Valley, California. *University of California Publications in American Archaeology and Ethnology* 23:1-122. Berkeley.

Hartzell, Leslie Louise

1992 Hunter-Gatherer Adaptive Strategies and Lacustrine Environments in Buena Vista Lake Basin, Kern County, California. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Heizer, Robert F., and Thomas R. Hester

1978 *Great Basin Projectile Points: Forms and Chronology*. Ballena Press Publications in Archaeology, Ethnology, and History No. 10. Socorro, New Mexico.

Justice, Noel D.

2002 *Stone Age Spear and Arrow Points of California and the Great Basin*. Indiana University Press, Bloomington.

Kroeber, Alfred L.

1967 The Indians of California. In *The North American Indians: A Sourcebook*, edited by Roger C. Owen, James J. F. Deetz, and Anthony D. Fisher, pp. 351-386. Macmillan, New York.

Moratto, Michael J.

1984 *California Archaeology*. Academic Press, Orlando, Florida.

Schneider, Joan S.

2006 Analyses of “Ground Stone” Milling and Processing Implements, Decorative and Ritual Objects, Cutting and Abrading Tools. In *Archaeological Laboratory Methods*, edited by Mark Q. Sutton and Brooke S. Arkush, pp. 71-104. Kendall/Hunt, Dubuque, Iowa.

Sutton, Mark Q.

1996 Research Design for Archaeological Investigations at Three Sites along the Northwestern Shore of Buena Vista Lake, Southern San Joaquin Valley, California. Working Draft 2-5-96. Received November 2, 2009.

1997 A Background for Archaeological Investigations at Buena Vista Lake, Southern San Joaquin Valley, California. *Kern County Archaeological Society Journal* 8:3-21.

Walker, Edwin F.
1947 *Excavations of a Yokuts Indian Cemetery, Elk Hills, Kern County, California*. Kern County Historical Society, Bakersfield.

Wallace, William J.
1978 Southern Valley Yokuts. In *California*, edited by Robert F. Heizer, pp. 448-461. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Wedel, Waldo
1941 *Archaeological Investigations at Buena Vista Lake Kern County, California*. Bureau of American Ethnology Bulletin No. 130. Washington D.C.