

## LATE-PERIOD RESOURCE INTENSIFICATION IN SIERRA VALLEY, EASTERN PLUMAS COUNTY: A RESPONSE TO THE MEDIEVAL CLIMATIC ANOMALY

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*Far Western's recent excavations at CA-PLU-1485 in northern Sierra Valley uncovered more than 50 features of a type rarely seen in northern California or western Nevada (and never in such large numbers): well-constructed, rock-lined cooking basins ranging from 36 to 330 cm in diameter. Other features – house floor, midden/charcoal-filled pits, clusters of unburnt stones – lay in close proximity to the cooking basins, and the larger site included a midden more than a meter deep. Most intriguing are the radiocarbon dates from these features. Eighteen radiocarbon dates from 16 of the features cluster tightly between 970 and 490 cal B.P.; 15 of these fall within the period of the Medieval Climatic Anomaly (1050-600 cal B.P.). Comparisons with similar features on the Columbia Plateau, and reading of the ethnographic data on the Washoe, suggest that these rock-lined basins were used to process camas (Camassia quamash). If so, this would be the most southerly example of large-scale camas processing found to date. Given the dates from these features, it is likely that they also represent resource intensification brought on by major climate changes over the last 1,000 years.*

In 1999 and 2002, Far Western Anthropological Research Group, Inc., of Davis, excavated site PLU-1485 along State Route 70 in northern Sierra Valley, roughly halfway between Reno and Quincy (Figure 1). The project was sponsored by the Federal Highway Administration and Caltrans, who planned to do rehabilitation work on this portion of the highway. Caltrans initiated consultation with the Washoe Tribe of Nevada and California, who provided a monitor (Lynda Shoshone) for the project. During test excavations in 1999, Far Western uncovered two rock-lined cooking basins, a small cache of bone tools, and a relatively extensive midden.

Charcoal and burnt soil from the features returned radiocarbon dates of about 500 and 2600 B.P. The younger feature (F. 2) lay immediately below the surface, in the midden deposit. The older (F. 1) lay some 35-40 cm below the surface, in the blond sand below the midden. These results suggested the possibility of two discrete temporal components. To test this hypothesis, and to see whether additional features were present within the impact area of the proposed project, Far Western (with Lynda Shoshone) returned to PLU-1485 in the fall of 2002.

### DATA RECOVERY AT PLU-1485

Data recovery excavations did, indeed, reveal additional features (Figures 2 and 3). So many, in fact, that Caltrans agreed to allow a second, "extended" data recovery phase to investigate the entire area of the site that was slated for destruction. Ultimately, Far Western uncovered a total of 57 features (Figure 4).

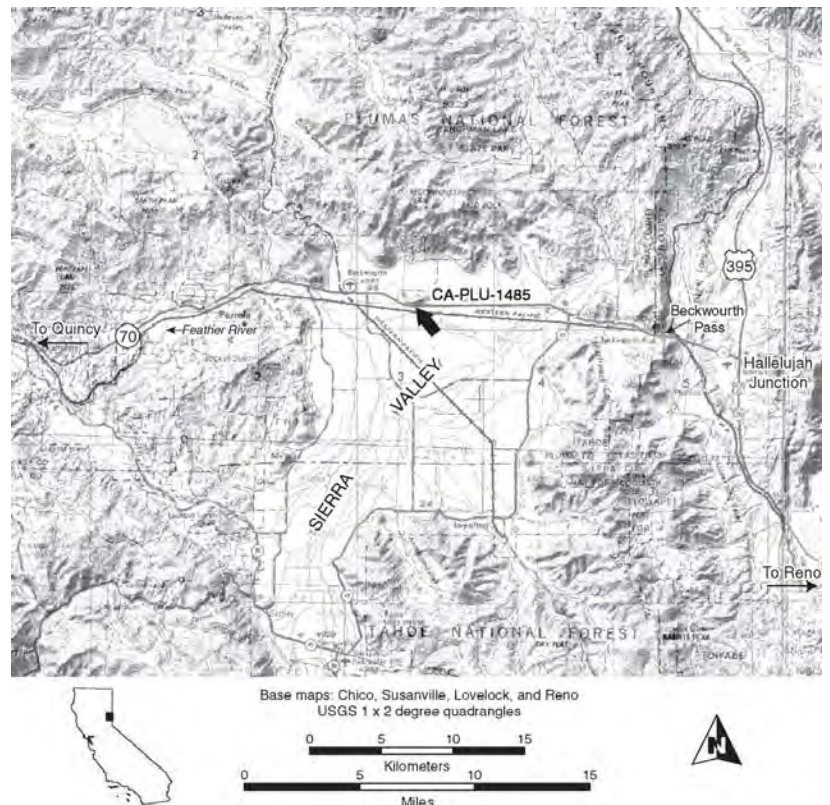


Figure 1: Project location.

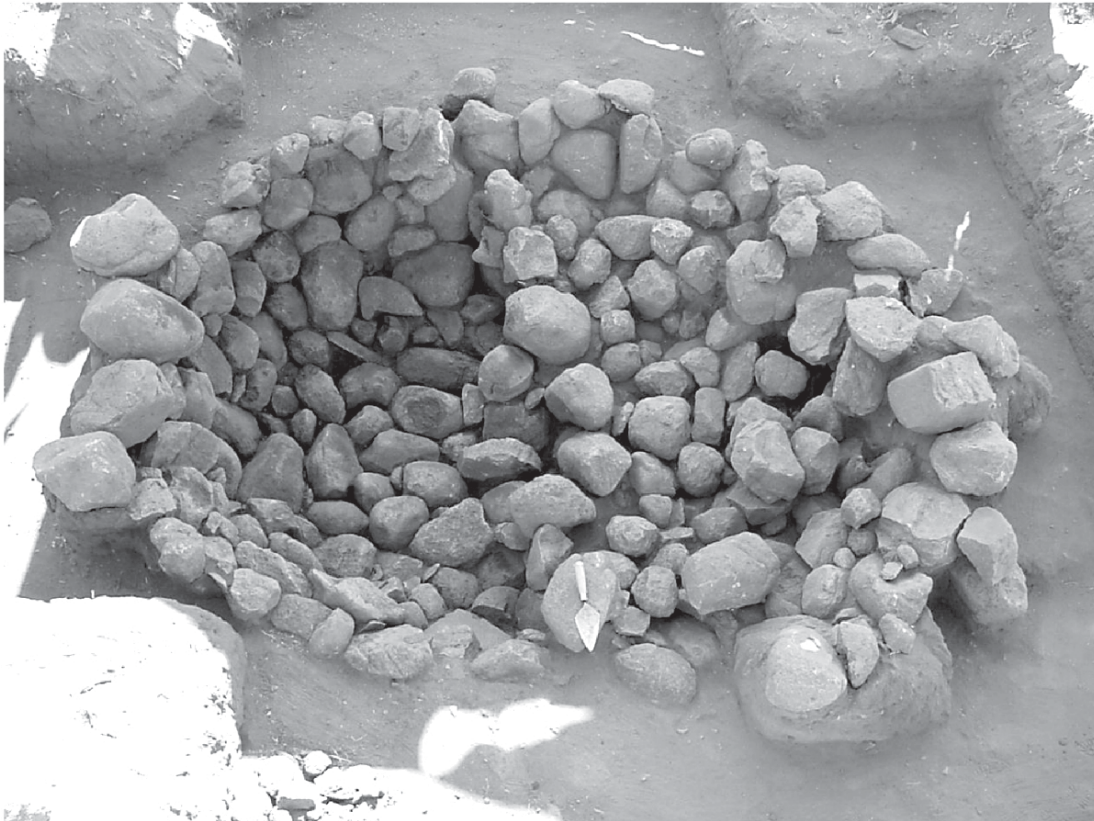
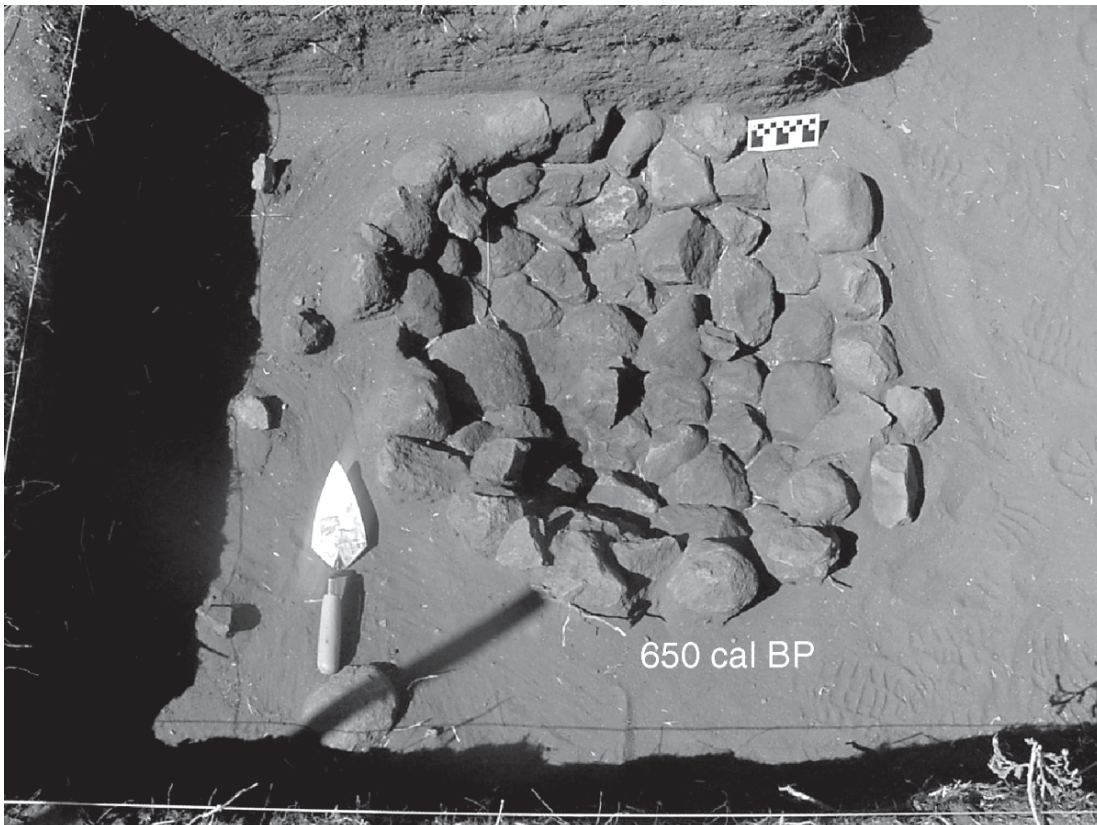


Figure 2: Feature 6, partial excavation.

Figure 3: Feature 20.



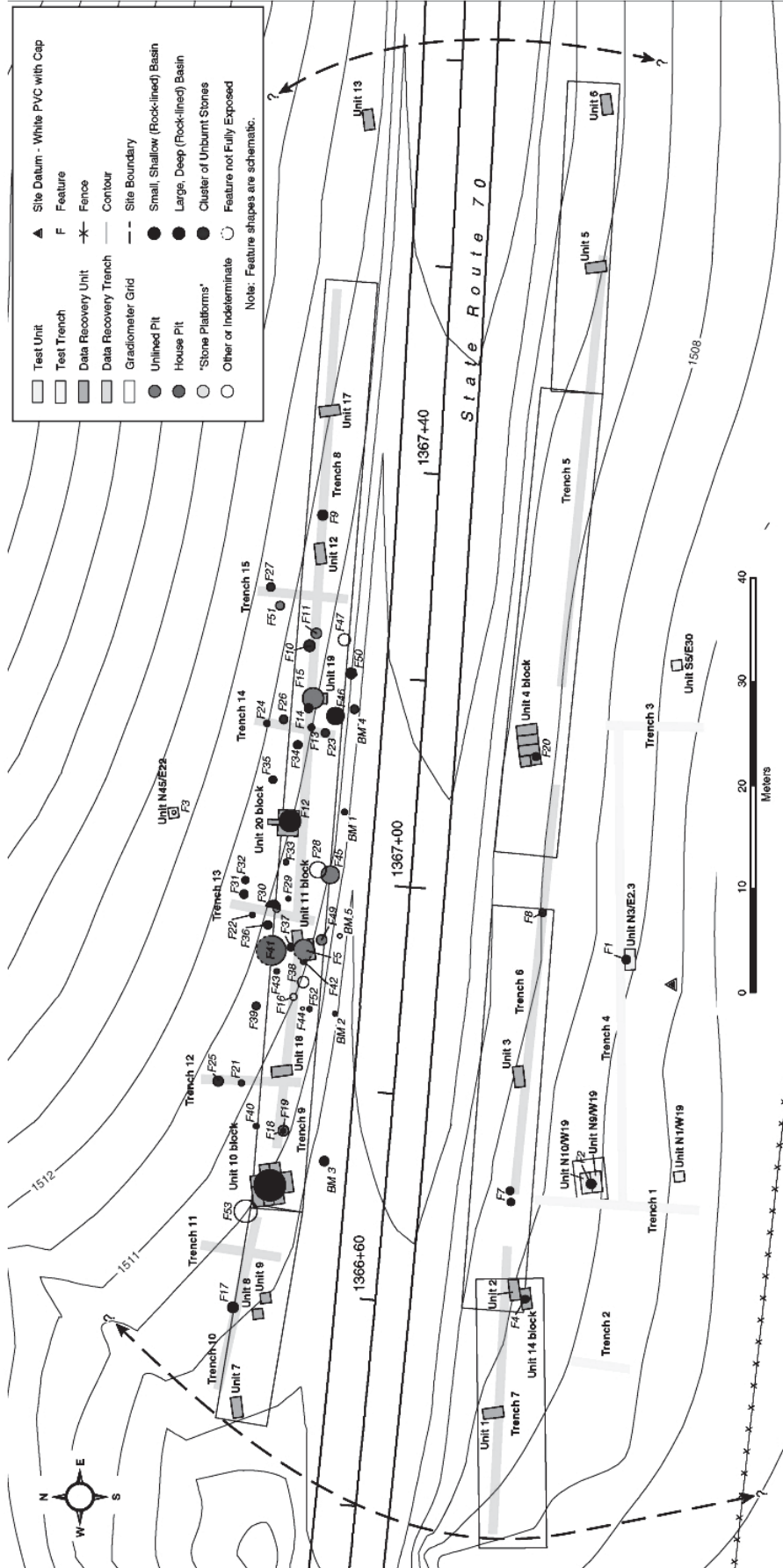


Figure 4: Site map.

These included 22 small, rock-lined basins with charcoal staining; three very large, rock-lined basins, full of charcoal and also with stained rocks; three small cooking features with flat stones surrounded by a ring of smaller, sub-rounded to sub-angular stones; eight unlined pits filled with charcoal and midden; one very large house floor with associated features; a cache of shaped and well-used milling equipment; and 15 small clusters of unburnt stones.

Visitors to the excavations included many archaeologists with a great deal of experience in northeastern California and western Nevada, including Gene Hattori of the Nevada State Museum; Louis (Sam) Payen; Susan Lindström; William Bloomer; Meredith (Penny) Rucks; Forest Service archaeologists Carrie Smith, Michael Baldrice, and Dan Elliott; and William Hildebrandt, Dr. D. Craig Young, and Kelly McGuire of Far Western. Two groups of Washoe elders also visited the site during data recovery. Everyone agreed that this collection of features was unlike anything they had seen in the region.

One of these visitors, Penny Rucks, is the former Forest Archaeologist for the Lake Tahoe Basin and now a private ethnographic consultant. She pointed out that in ethnographic times the northern Washoe had come to Sierra Valley to harvest camas (*Camassia quamash*), which they took over to Pyramid Lake to trade with the Paiute. This began a discussion of the possibility that the stone-lined cooking features at PLU-1485 had been used to bake camas bulbs.

### THE ECONOMICS OF CAMAS PROCESSING

Nearly all of the ethnographic or archaeological literature on camas roasting involves the native peoples of the Plateau – particularly Idaho and Washington, but also in Oregon and up into Canada. Nowhere in the literature have we found a discussion of large-scale camas processing among California or Nevada tribes. The Handbook of North American Indians estimates that at one time, camas and other roots made up more than 50 percent of the Nez Perce diet (Lahren 1998). The Nez Perce actually gave camas bulbs to Lewis and Clark, and Meriwether Lewis wrote a 1,500-word description of it in his journal. Unfortunately, the Corps of Discovery did not process it correctly and got rather ill. In his *Journal*, Clark reported that “Some of these roots seem to possess very active properties; for after supping on them this evening, we were swelled to such a degree as to be scarcely able to breathe for several hours...”

Camas, which is about 10 percent protein, requires roasting or baking to break down the inulin and make it

digestible. This, together with the digging required to harvest the bulbs and the relatively large number of bulbs necessary to make a meal, suggests that camas is something of a “high-cost” resource, one that people might not target unless more preferred resources were unavailable.

An account of the Nez Perce describes the roasting features this way:

A typical camas roasting pit...was dug 2 to 6 feet deep. The bottom was lined with round stones and covered with driftwood left in the area by flooding creeks....Once the bottom of the roasting pit was ready, the group alternated leaves and grass with camas—often placed in hemp dogbane bags, as much as 20 to 30 pounds per bag—until the pit was full. They poured water over the pit to create steam...covered the final layer of leaves with soil...and often built a fire on top of the pit, adding more wood as needed to keep the fire burning for two or three days. [Downing and Furniss 1968]

In the ethnographic period, at least, Sierra Valley was used by both the Washoe and the Maidu, although d’Azevedo’s (1986:468) map shows it as entirely within Washoe territory (Figure 5). The valley would have been a desirable location: a few km to the north is the Siegfried Canyon Ridge basalt quarry, and a few km to the west are the Gold Lake basalt quarries. These two sources dominate most basalt assemblages in the area. In addition, water is plentiful. Sierra Valley is the headwaters of the Feather River, and there are springs and seeps all over the valley floor.

While we have found no previous mention in the archaeological literature about large-scale camas use in this area, it is clear that both the ethnographic-period Washoe and the Mountain Maidu ate camas. Siskin (ca. 1920s) and Wright (ca. 1920s) both documented that the northern Washoe came to Sierra Valley in the early summer to harvest camas, some of which they took to Pyramid Lake to trade with the Paiute. And a Maidu story about Mountain Lion and his children says of the children: “and at that place, *digging camas*, they had eaten their supper.” Later in the same story: “Having departed towards a distance country, they had camped, they had shot a young deer, they had made a bow...the old man reached that place and camped. Taking down the deer which hung there, he roasted it, *roasted camas in the ashes*, and ate supper” (Coyote Man 1973; emphasis added).

### AGE OF THE PLU-1485 FEATURES

Once out of the field, we submitted 16 radiocarbon samples to Beta Analytic (in addition to the two samples sent earlier from test investigations). The samples all

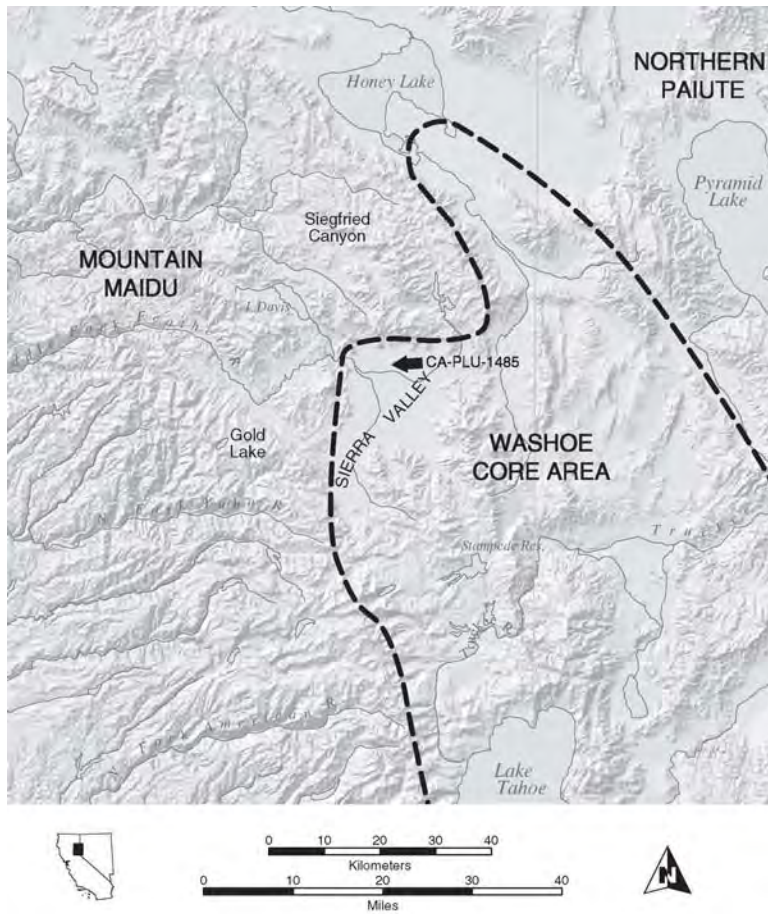


Figure 5: Ethnographic boundaries (after d'Azevedo 1986).

consisted of charcoal or charred wood taken directly from the feature fill, some of them extracted from flotation samples.

The results were startling: of 18 samples from 16 different features, all but three fall between 500 and 1,000 years ago (2-sigma ranges).

Moreover, there was essentially no physical overlap between the features, and they all were constructed at roughly the same level in the profile. This, and the lack of visible stratigraphy within the midden deposit, made it virtually impossible to define the two discrete vertical components suggested by the test excavation results.

Many of the features incorporated pieces of broken milling equipment – pestles, handstones, millingtones – into their construction, indicating that the builders were scavenging rocks from the larger site area. Scavenging and reuse is also reflected in the obsidian hydration profile, where a small arrow point returned a double hydration reading of 2.4/7.4 microns (Sutro Springs source). It is clear from the rest of the hydration data that the larger site area had been occupied for several thousand years before the construction of the rock-lined features.

In sum, all indications are that PLU-1485 was a well-known and well-used habitation site throughout the Middle Archaic period, and that for some reason its primary use changed dramatically about 1,000 years ago.

## THE MEDIEVAL CLIMATIC ANOMALY

The possible explanation for the change becomes apparent when we plot our radiocarbon dates against the Medieval Climatic Anomaly (also known as the Medieval Warm Period or Medieval Drought) (Figure 6). As Stine (1990, 1994) has shown with his data on drowned tree stumps in Mono Lake and the Carson River, the west suffered two periods of severe and prolonged drought between 1058 and 600 cal B.P. Graumlich and her colleagues at the University of Arizona, Tucson's tree-Ring Laboratory have examined tree-ring data from conifers (foxtail pine and western juniper) in the sub-alpine zone of the Sierra Nevada to confirm an unusually warm interval between 850 and 575 B.P. and a return to colder temperatures with the Little Ice Age (ca. 500 years ago) (Graumlich 1993; Graumlich and Lloyd 1996).

Those familiar with world history know that the Medieval Climatic Anomaly was a major phenomenon that caused horrific crop failures and starvation in many areas of the globe. Jones et al. (1999) have documented several examples of how the anomaly affected parts of California. It is no coincidence, we believe, that the many processing features were constructed at PLU-1485 at precisely the same time that these large-scale climate changes occurred. We argue that the "severe and prolonged" droughts caused many of the traditional food resources to diminish or disappear for a time, forcing people to shift their focus to more labor-intensive resources, such as camas.

At first glance, one might expect camas—a meadow species—to suffer during a drought as well. In fact, camas actually prefers mesic or intermittently wet conditions. True wetland areas in this part of the state are dominated by sedges or cattails, not bulbs. Christopher Ross, a plant ecologist with the Bureau of Land Management's Nevada State Office, proposes that habitat for plants like camas may actually have increased in Sierra Valley and environs during periods of drought, as marshes and other flooded areas became only seasonally wet. Moreover, if other resources are suffering because of the severe climatic conditions of

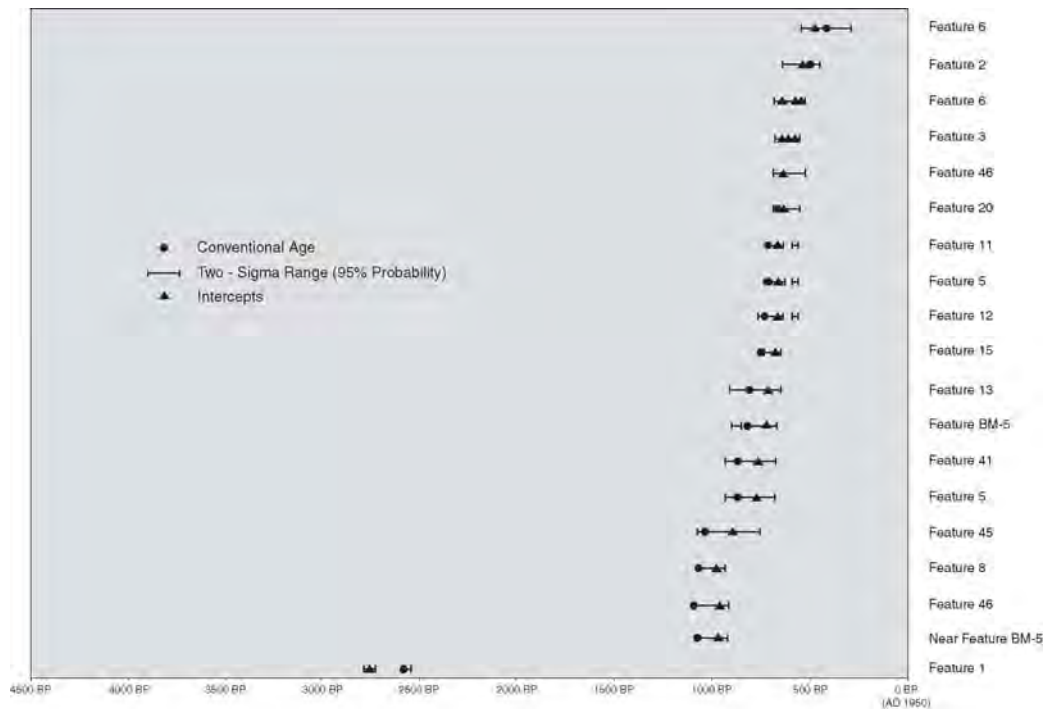


Figure 6: Calibrated radiocarbon dates from CA-PLU-1485.

the Medieval Warm Period, camas may have been even more valuable as a source of food. Bulbs can lie dormant until conditions are right, and once cooked, camas bulbs can be stored for months.

Our flotation analyses showed that camas bulbs were, indeed, processed in at least some of the features at PLU-1485. It is interesting to note that all three of the very large (“communal”) ovens contained camas, as did one of the smaller basins and one of the unlined pits. Most of the smaller features, however, produced *Brodiaea* rather than camas, suggesting that the two types of ovens may have served different purposes. Since camas requires such a long cooking time, the very large features, which could accommodate larger, hotter fires, may have been reserved for this task.

### A REGIONAL PHENOMENON?

Despite the lack of discussion of large-scale bulb processing in the archaeological literature, a review of the “grey” literature reveals other sites in the larger vicinity that have stone-lined ovens quite similar to those at PLU-1485 (though none so far with as many as at that site). The next-largest group was found in Truckee Meadows near Reno by Nevada Department of Transportation archaeologists, who excavated 22 of the smaller features (Turner 1993). These features not only look very similar to ours (Figure 7), but they date to exactly the same period.

It is clear from Figure 8 that these ovens were being constructed and used well before 1,000 years ago, on a much smaller scale. It was not until that time, however, that people began to build these features in such large numbers.

Farther north, people also appear to have been focusing on roots and bulbs in the late period. On the Madeline Plains and in the Pit River uplands of far northeastern California, we find a dramatic increase in the amount of milling equipment at about 3.0 microns (South Warners/Bordwell Spring sources), or roughly 1,000 years ago, which Delacorte (2002) interprets as a late-period shift to intensive root processing – roots, rather than seeds, he argues, because this ground stone does not have the heavy wear or high polish (from rock-to-rock contact) typical of seed processing tools.

We agree with Delacorte’s idea that late-period peoples in this region were adapting to population/resource imbalances by relying more heavily on roots and bulbs. We disagree, however, with his argument that these imbalances could not have been triggered by climatic changes (Delacorte 2002:48). It is no coincidence, in our opinion, that these major shifts in human behavior began at precisely the same time as a period of severe and prolonged drought that affected groups in so many different areas of California and the Great Basin. It is almost certainly the case that the changing climate favored certain plant species over others and thus made them more attractive than they

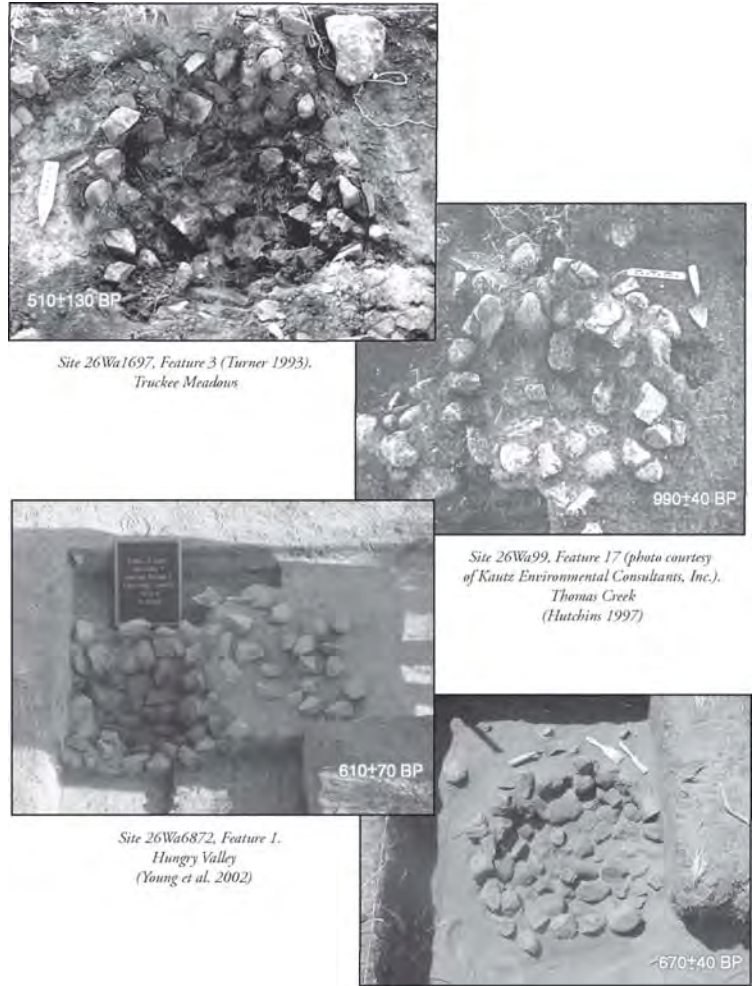
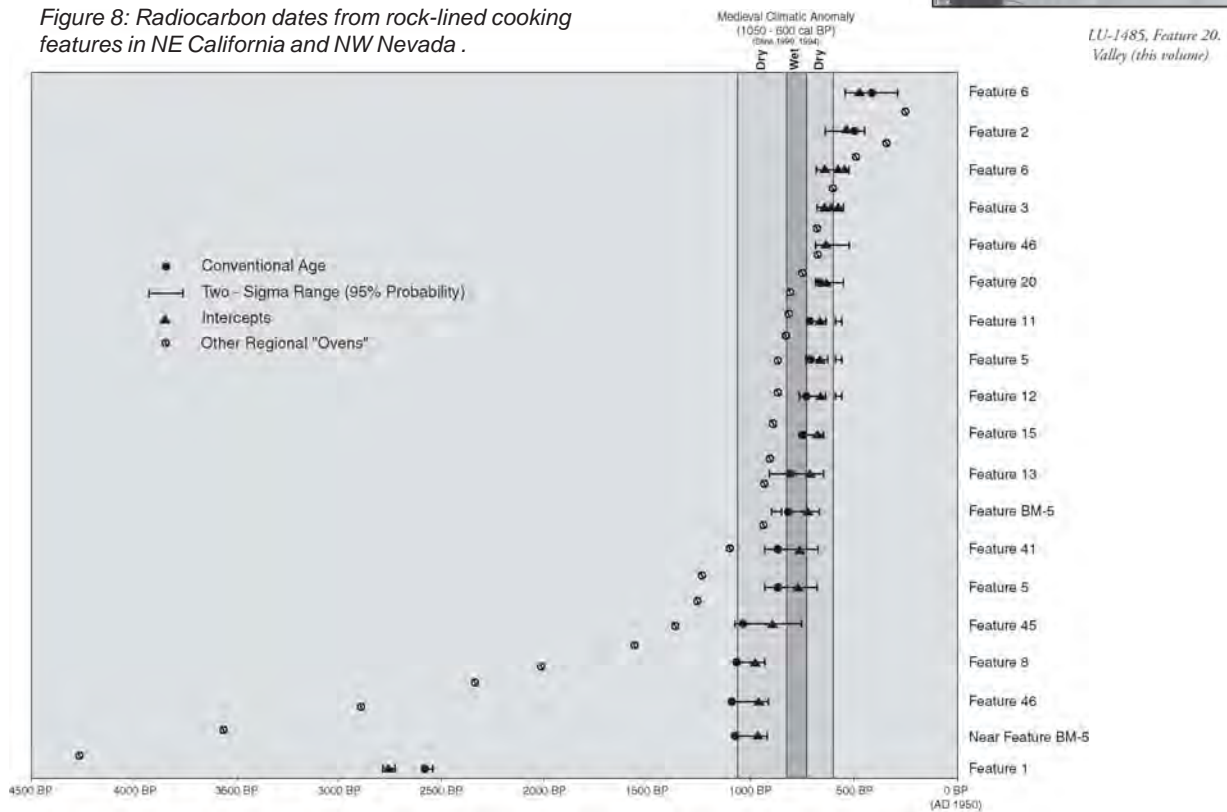


Figure 7: Small, rock-lined basins from Truckee Meadows (above) and The Buttes (below).

Figure 8: Radiocarbon dates from rock-lined cooking features in NE California and NW Nevada.



had been before. A greater abundance of such foods presumably would have led people to intensify their use even under normal conditions – and more so when other resources were suffering.

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 (Closing note: Because of the efforts of Caltrans archaeologist Todd Jaffke, and of A. Brian Wallace and Lynda Shoshone of the Washoe Tribe of Nevada and California, the features reported on here remain largely intact. At the urging of the Tribe, Caltrans redesigned their project to protect this very important site. It is a place of very special meaning for both the Indian people and the archaeologists who worked here.)

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