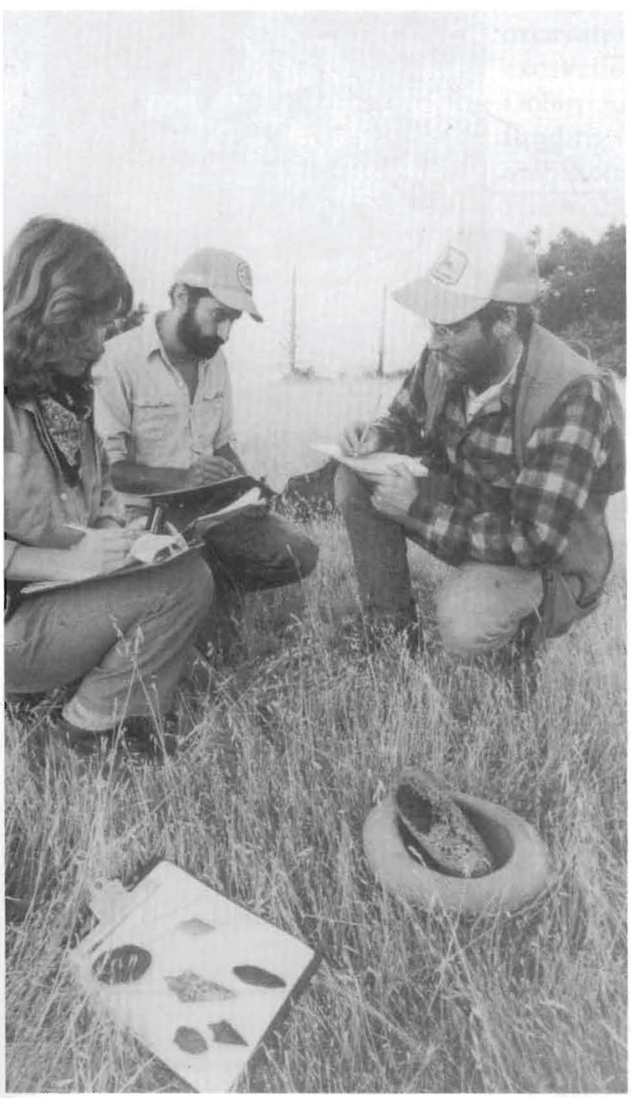
CHAPTER 1

THE PREHISTORY OF BIG CREEK

Terry L. Jones
Department of Social Science
California Polytechnic State University
San Luis Obispo



Archaeological research began at Big Creek in 1983 with the first of four summer field classes offered by U.C. Santa Cruz and U.C. Davis. For the most part, this was the first systematic research to be undertaken in the South Coast Range or on the Sur coast, and certainly the first of any consequence in the Big Creek drainage. Before 1983, archaeologists had tended to overlook Big Sur (however, see Baldwin 1971) because it seemed unlikely that it had been a major demographic or cultural center for prehistoric peoples. While it remains true that populations in Big Sur were probably lower than in the more heavily settled San Francisco Bay and Santa Barbara areas, our studies have shown that there is a great deal more to Big Sur prehistory than previously suspected. UC Berkeley archaeologists conducted surveys and one excavation (Pohorecky 1976) between 1950 and the early 1960s, but most of the earliest work was limited to areas immediately adjacent to Highway 1. In 1983, the number of known archaeological sites in the Big Creek area was very small, and most of these were located on or very near Highway 1 and the shoreline (Figure 1).

Initial Archaeological Survey

The initial archaeological effort at Big Creek focused on surface reconnaissance. Before we started this work, many of the students doing natural history research had come across unrecorded archaeological

sites, and the reserve managers (Larry Ford and Ken Norris) were anxious to see some research energies devoted to archaeology. Starting in 1983, students began walking over the Big Creek area systematically, beginning with the Reserve proper and then the Gamboa Point properties. Eventually, adjoining acreage of Los Padres National Forest was also examined (Huddleson and Jones 1992). During this initial effort, both historic and prehistoric resources were identified, carefully documented and mapped. These included shell middens and historic structures. Surface artifacts were also collected.

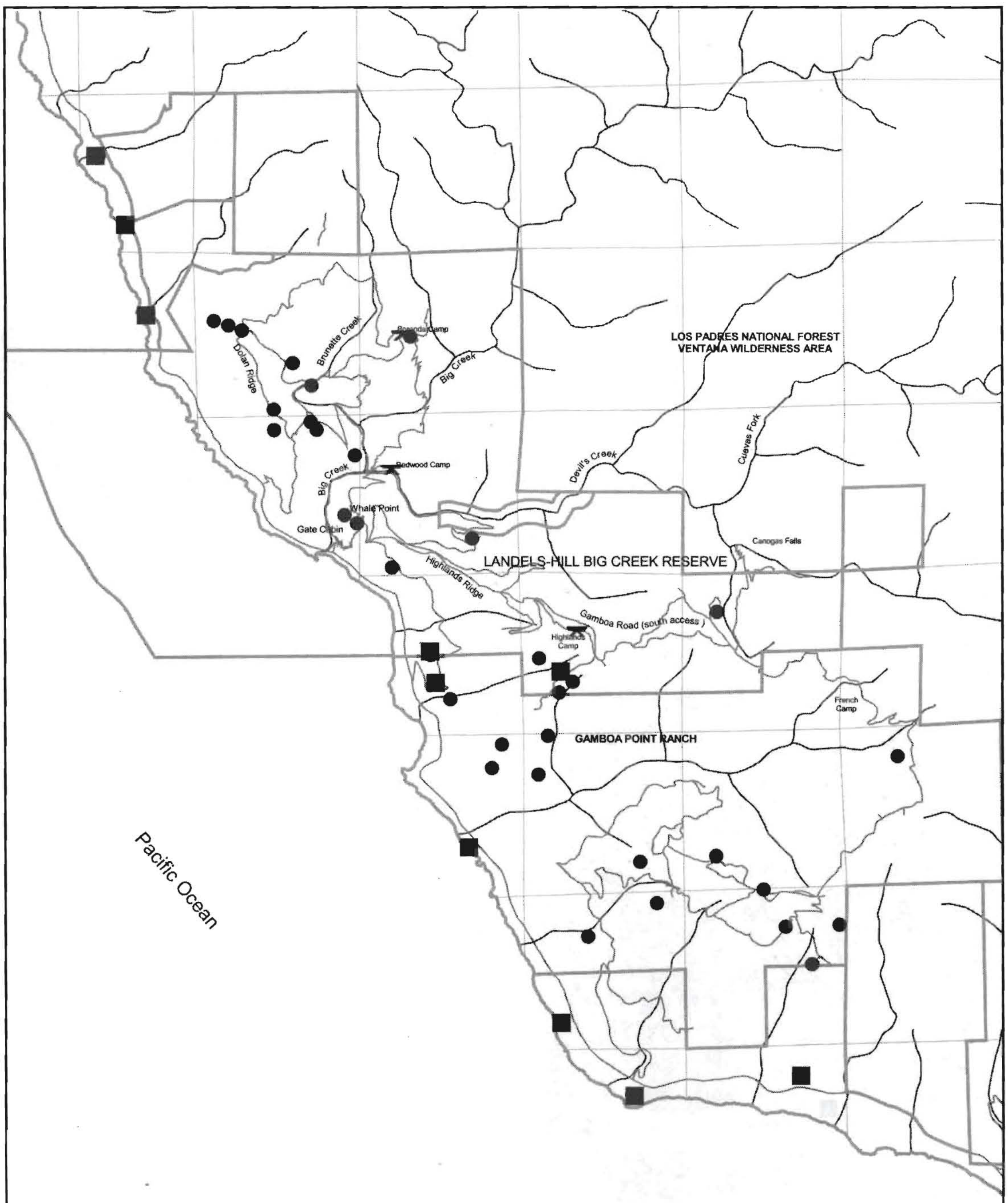


FIGURE 1. Archaeological sites known prior to the 1983–4 survey (squares) and those discovered subsequently (circles)

A total of 40 sites contained prehistoric materials. The distribution of these showed a pattern of settlement very different from the one suggested by earlier research (Figure 1). Prehistoric archeological sites were found in a wide range of settings including places where few would have been expected—two to three miles inland, and 2000 to 3000 feet above sea level.

Post-Fire Excavations

FIGURE 2. An aspiring archaeologist taking notes

Inventory work, completed in 1984, was followed by the Rat Creek Fire in 1985. In destroying nearly all of the historic structures that had been recorded over the previous two seasons, the fire created a sense of urgency about further archaeological research. On one hand, the flames opened up the vegetation and revealed sites and features that had previously been invisible. On the other, the fire caused an enormous increase in erosion and several of the archaeological sites began to suffer significant impacts.

In response to this situation, grant funding from the Giles Mead Foundation was used to implement a program of salvage excavations at some of the more badly eroding sites. The first excavations were conducted below the University Center and on Dolan Ridge in 1986 (Jones 1986). In 1990, with additional funding from the State Historic Preservation Office, a more ambitious salvage program was completed at six sites (Jones and Haney 1992). The excavation data from Big Creek, supplemented with findings from four other Big Sur excavations, provided more substantive information on the antiquity of human activity in the Big Creek area. This allowed us, in turn, to address more complex issues of local and regional prehistory. Specifically, the field research of 1983–1990 resulted in development of a local cultural chronology and also provided preliminary information on settlement, subsistence, paleoenvironment, and exchange.

Big Creek Cultural History

After the surface inventory was completed, it was guessed that human presence at Big Creek dated to about 4000 or 5000 years before the present (Jones et al. 1989), but the excavation findings, particularly those from one very deep, stratified deposit (CA-MNT-1232/H) on the Interpretive Trail, pushed this date back to 4400 B.C. Most of the other archaeological sites proved to represent relatively short-lived occupations of 500-1000 years dating between 3700 B.C. and the time of historic contact. As of the year 2000, the basal component from the Interpretive Trail Site is the oldest archaeological expression in the Big Sur District, although a comparably dated but poorly delineated occupation is known from the interior in the Fort Hunter Liggett area (Jones and Haney 1997a). More ancient sites are also known from the Elkhorn Slough area (6000 B.C.) and the San Luis Obispo coast (circa 8000 B.C.). The basal occupation at the Interpretive Trail site represents the first of three successive archaeological cultures represented at Big Creek:

- Milling Stone Culture: 4400–3700 B.C.
- Hunting Culture: 3700 B.C.–A.D. 1300
- Late-Protohistoric Period: A.D. 1300–1769

The California Milling Stone Culture or Horizon was tentatively identified in the Santa Barbara Channel area in 1929 (Rogers 1929), and was subsequently defined more precisely in 1955 (Wallace 1955). It is marked by a distinctive assemblage of grinding tools (milling slabs and handstones) and crude core and flake tools. Milling Stone sites commonly produce very few projectile points. Until recently this culture was thought to be restricted to southern California, but the findings from Big Creek are one of several that have pushed the Milling Stone Culture into central and northern California in early Holocene contexts (McGuire and Hildebrandt 1994; Fitzgerald and Jones 1999).

FIGURE 3. Work in progress at the Interpretive Trail site

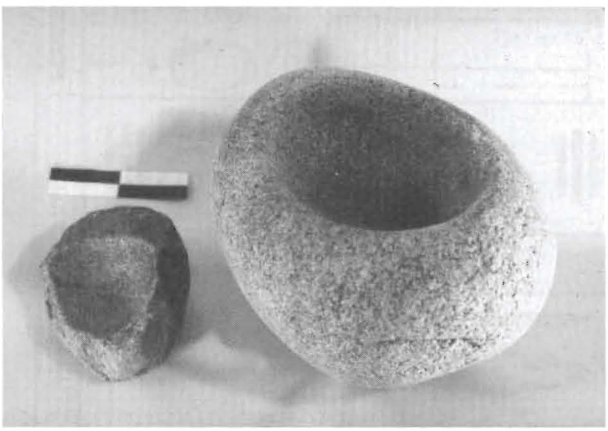
The Interpretive Trail Site is a relatively small (3,756 m^2) shell midden situated on a small bench, and the depth of the deposit (280 cm) was unexpected. Two discrete layers were identified: Stratum I—a homogeneous, very dark grayish-brown (10YR 3/2) loamy shell midden that extended from the surface to 170 cm, and Stratum II—a distinct light brownish-gray (10YR 6/2) midden with a heavy calcium carbonate precipitate. Four radiocarbon dates bracket the Stratum II occupation between 4400 and 3300 B.C., with the most recent date marking the interface between the two layers. As with most Milling Stone Sites, the most abundant artifacts in Stratum II were handstones (5), milling slabs (2), and flake tools (3), with two bifaces and one projectile point. The faunal assemblage was highlighted by a dense concentration of mollusc shells dominated by California mussel (*Mytilus californianus*) (97.3%), with minor frequencies of barnacle (*Balanus* sp.) (1.7%), and purple sea urchin (*Strongylocentrotus purpuratus*) (0.5%). The latter were present in such low quantities that they were probably collected as riders on the mussel shells. Vertebrate remains included 40 identified specimens, dominated by black-tailed deer (*Odocoileus hemionus*) (Number of identifiable specimens [NISP]=27; 75.0%), harbor seal (*Phoca vitulina*) (NISP=3; 8.3%), and gray fox (*Urocyon cineroargenteus*) (NISP=3; 8.3%). A total of 77 fish bones included cabezon (*Scorpaenichthys marmoratus*) (NISP=33; 42.8%), rockfish (*Sebastes* sp.) (NISP=17; 22.0%), and lingcod (*Ophiodon elongatus*) (NISP=8; 10.3%). The Interpretive Phase in Big Sur prehistory was named for this stratum (Jones 1993).

At about 3700–3500 B.C. the Milling Stone Culture gave way to the first phase of the Hunting Culture, which is represented at CA-MNT-73 on the Big Sur River and at Big Creek by findings from CA-MNT-1228. These sites showed an abundance of large stemmed projectile points, bowl mortars and pestles, with the latter occurring in very low frequencies along with the slabs and handstones (holdovers from the Milling Stone Culture). Ornamental artifacts were also more abundant, as represented by rectangular-shaped Olivella shell beads and talc schist pendants. Pointed bone fish gorges were also found at

both sites along with the earliest obsidian in the area. Volcanic glass is not native to the South Coast Ranges, and using the technique of x-ray fluorescence we were able to identify obsidians from at least nine different sources, including Coso in the southern Owens Valley, Casa Diablo near Mono Lake, and the Napa and Annadel sources north of San Francisco Bay.

These changes in the tool assemblage mark the Early Period of the Hunting Culture, represented at Big Creek by the Redwood Phase. The increase in projectile points that marks the onset of the Early Period suggests greater emphasis on terrestrial game, and the appearance of fish gorges and increased frequency of fish bones at sites outside of Big Creek suggest more emphasis on fishing than during the Milling Stone Period (Jones 1996; Jones and Waugh 1997). The presence of the mortars and pestles further suggests changes in the way people were processing gathered food resources.

FIGURE 4. Examples of mortars



The basic Hunting Culture tool inventory—and the lifeway inferred from it and associated faunal remains—persisted for about 4500 years. During the Willow Creek Phase of the Middle Period (600 B.C.–A.D. 1000) fish seem to have become even more important in local diets, and the curved shell fishhook was introduced, probably as a more effective implement for hook and line fishing in kelp beds. This was an addition to an otherwise unchanged cultural assemblage. The archaeological record on the central California coast in general shows significant continuity from 3500 B.C. to about A.D. 1000—the era ascribed to the Hunting Culture. The projectile point styles represented in deposits dating to A.D. 500, for example, are the same that are seen in sites dating about 3500 B.C.

The end of the Middle Period, however, is marked by a series of major changes in tool inventories and lifeways. After A.D. 1000, small leaf-shaped projectile points, associated with bow and arrow technology, appear for the first time. These small points occur in small numbers until about 1200-1300 A.D., after which time the bow and arrow seems to have taken over local weapon systems entirely, and the older archaic points disappear almost completely. Bead types also changed at this time, and the milling equipment shifted from bowl mortars and pestles to mortar cups ground into rock outcrops, and hopper mortars—portable mortars to which basketry hoppers were attached. The Late Period (A.D. 1300-1769) in Big Creek prehistory therefore is marked by a distinctive assemblage of small projectile points (most representing the Desert Side-notched style), hopper mortars, bedrock mortars, and distinctive bead types. These mark the Dolan Phase, which was identified during the 1986 excavation on Dolan Ridge. Late Period faunal remains also show lower densities of fish bone than do Middle Period sites. The Middle–Late Transition also shows marked changes in settlement, as the sites at the highest elevations and furthest distances inland were first occupied at this time. During the last several centuries before historic contact, subsistence seems to have had a more terrestrial focus than it had previously.

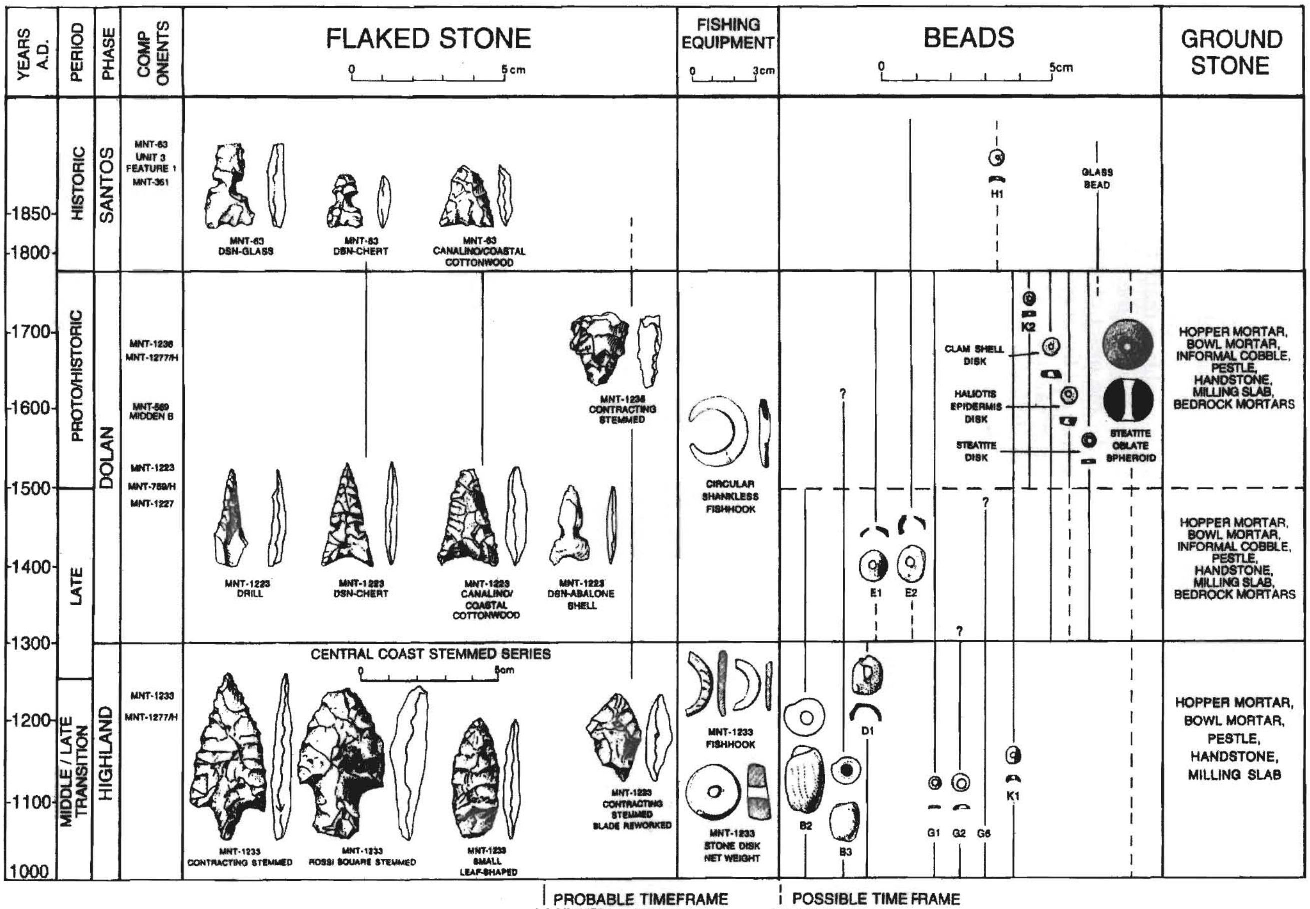
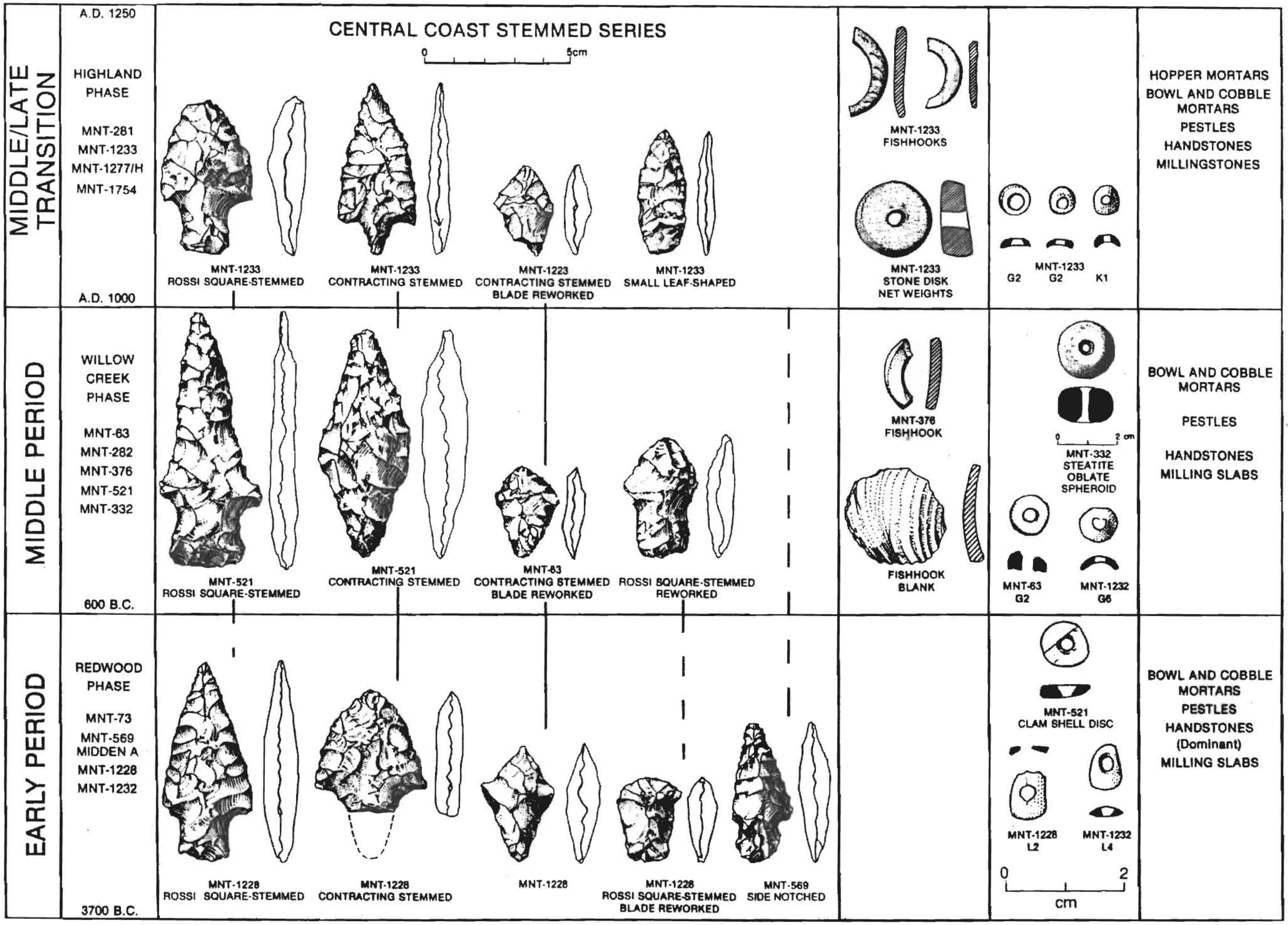


FIGURE 5. Late Holocene artifact chronology for the central coast


MIDDLE/LATE TRANSITION
A.D. 1250
HIGHLAND PHASE
MNT-281
MNT-1233
MNT-1277/H
MNT-1754
A.D. 1000
CENTRAL COAST STEMMED SERIES
0
5cm
MNT-1233 ROSSI SQUARE-STEMMED
MNT-1233 CONTRACTING STEMMED
MNT-1223 CONTRACTING STEMMED BLADE REWORKED
MNT-1233 SMALL LEAF-SHAPED
MNT-1233 FISHHOOKS
MNT-1233 STONE DISK NET WEIGHTS
MNT-1233
G2
G2
K1
HOPPER MORTARS
BOWL AND COBBLE MORTARS
PESTLES
HANDSTONES
MILLINGSTONES
MIDDLE PERIOD
WILLOW CREEK PHASE
MNT-63
MNT-282
MNT-376
MNT-521
MNT-332
600 B.C.
MNT-521 ROSSI SQUARE-STEMMED
MNT-521 CONTRACTING STEMMED
MNT-63 CONTRACTING STEMMED BLADE REWORKED
ROSSI SQUARE-STEMMED REWORKED
MNT-376 FISHHOOK
FISHHOOK BLANK
0
2 cm
MNT-332 STEATITE OBLATE SPHEROID
MNT-63 G2
MNT-1232 G6
BOWL AND COBBLE MORTARS
PESTLES
HANDSTONES
MILLING SLABS
EARLY PERIOD
REDWOOD PHASE
MNT-73
MNT-569 MIDDEN A
MNT-1228
MNT-1232
3700 B.C.
MNT-1228 ROSSI SQUARE-STEMMED
MNT-1228 CONTRACTING STEMMED
MNT-1228
MNT-1228 ROSSI SQUARE-STEMMED BLADE REWORKED
MNT-569 SIDE NOTCHED
MNT-521 CLAM SHELL DISC
MNT-1228 L2
MNT-1232 L4
0
2
cm
BOWL AND COBBLE MORTARS
PESTLES
HANDSTONES (Dominant)
MILLING SLABS

Alternative Interpretations of Transition

FIGURE 6. Sifting excavated material

In the simplest of terms, Big Creek prehistory is marked by two intervals of major change. The first was at 3500 B.C. when the Milling Stone Culture was replaced by the Hunting Culture, and subsistence expanded to include more fishing and intensive processing. Inter-regional trade seems to have increased, if not started, at this time as well. The second was circa A.D. 1300 when the Hunting Culture, which showed some minor variations up to that point, was replaced by the Dolan Phase and a wholly new cultural assemblage. This new suite of artifact types was linked to a more terrestrially focused adaptation. Recent research at Big Creek has been focused on development of explanations for these apparent transitions by considering three alternative causal factors:

- economic intensification by an "in situ" or resident group
- ethnic replacement or in-migration by new ethnic groups
- changes in environment that forced adaptive adjustment or other responses

To evaluate these alternatives, two lines of additional research were pursued. First, we attempted to summarize the paleoenvironment of the Central Coast based on studies done in surrounding regions. Second, we undertook experiments in the collection of mussels, which make up over 90% of the materials in Big Creek middens. The results of these studies and the insights they provide into the apparent causes of prehistoric cultural change at Big Creek are described below.

Paleoenvironment

The degree to which the ambient conditions remained constant over the last 6400 years at Big Creek is a question of considerable importance, since it is reasonable to assume that changes in climate and sea temperature would affect the character and abundance of available marine and terrestrial resources and influence the lifeways of hunters and gatherers exploiting this resource base. Unfortunately, no fine-grained, fully concordant Holocene paleoenvironmental sequence, incorporating surface sea temperature, terrestrial climate, and vegetation change is available for the central California coast, and we are forced to rely instead on approximations based on studies completed to the north in the Monterey and San Francisco Bay areas (e.g., Adam et al. 1981; Axelrod 1981; Ingram and DePaolo 1993; Rypins et al. 1989; van Geen et al. 1992; West 1988), to the east in the Sierra Nevada (Curry 1969; Davis and Moratto 1988; Graumlich LaMarche 1974; Stine 1994), and to the south in the Santa Barbara Channel (Arnold and Tissot 1993; Glassow et al. 1988, 1994; Heusser 1978; Kennett 1998; Koerper et al. 1985; Morgan et al. 1991; Pisias 1978, 1979). Paleoenvironmental studies from the Sur coast itself are limited to the oxygen isotope findings (Jones and Kennett 1999) described in more detail below. This preliminary study compliments the more detailed research from these surrounding regions and together we have been able to develop tentative guesses about trends through time at Big Creek. Suffice it to

say, however, that more paleoenvironmental research needs to be completed before we can be confident about actual conditions in the Big Creek area over the last 6400 years.

That the North American continent experienced a series of large-scale low-intensity environmental fluctuations during the Holocene Epoch has been known since the work of Antevs (1948, 1952); however, the degree to which these changes significantly altered the composition of human environments along the California coast is open to discussion. An opinion offered by Johnson (1977) is of paramount importance and is certainly accurate to some degree: the severity of impact in the coastal zone was less than in inland contexts because of the tempering effect of ocean waters.

FIGURE 7. Sorting pieces of shell

While it is likely that climate was slightly warmer and/or drier during the early-mid Holocene, the basic vegetative communities present today were probably in place in Big Sur 6400 years ago, when the earliest site at Big Creek was occupied. A transition toward cooler sea temperatures ca. 3400 B.C. corresponds with an increase in redwoods and grasses in the Monterey Bay area, and maximal occurrence of sunflower pollen in the Santa Barbara Channel. Alternatively these signals indicate a cool/wet (Glassow et al. 1988), warm/dry (Heusser 1978), cool/dry, or warm/wet climate, but the persistence of redwoods, indicated by pollen findings from Monterey Bay (West 1988) suggests this was not a period of extended drought. There is nothing in the climatic record to suggest significant variation in terrestrial or marine environments until A.D. 850–1350, when there is growing evidence from the Sierra Nevada for prolonged droughts (often referred to as the Medieval Climatic Anomaly). Oxygen isotope studies from Big Creek also suggest unusual sea temperature profiles between A.D. 1300 and 1500 (Jones and Kennett 1999). Following the Medieval Period, climate in most of California seems to have become cooler and/or wetter during the so-called "Little Ice Age."

Economic Intensification and Experimental Evaluation of Mussel Collecting Strategies

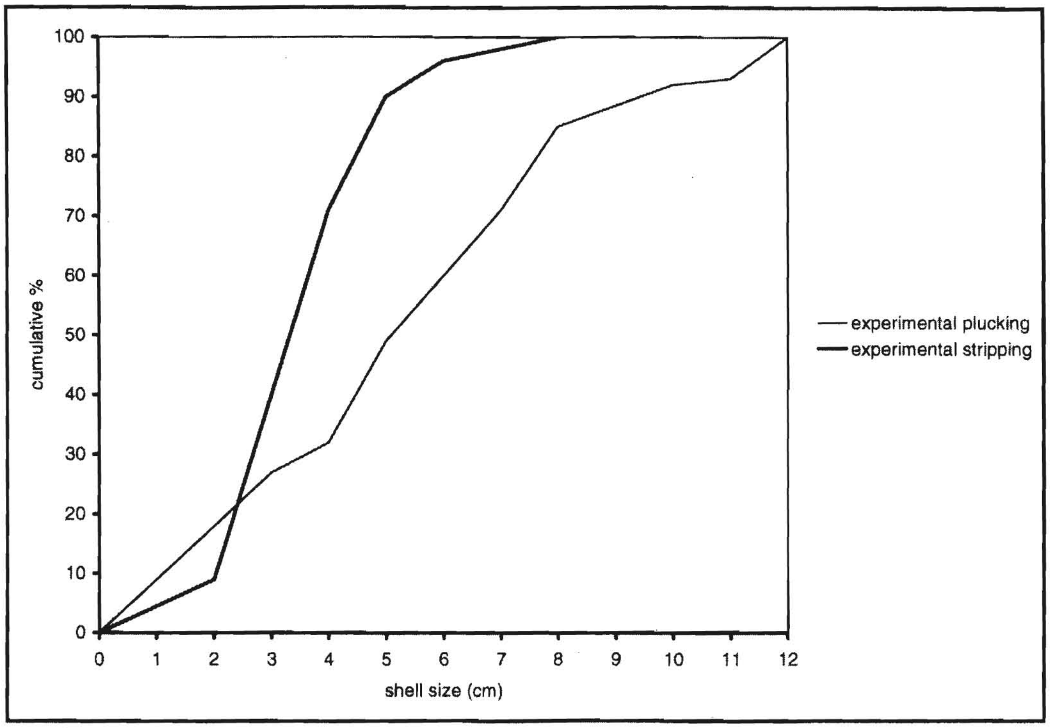
Literally millions and millions of mussel shells are represented in the Big Creek archaeological sites. These shells reflect thousands of intertidal collecting trips and an equal number of small economic decisions that people made in the process of trying to feed themselves efficiently. In the best of all worlds archaeologists can observe present-day foragers collecting a species in order to understand the energetics associated with exploitation of that particular resource. Since native people have not collected mussels on the Sur coast for perhaps 150 years, we were forced to resort to the next best option: experimental archaeology. The results of these experiments are described below.

All over the world, shellfish collection was primarily done by women and young children. Good historical data do not exist for California, but there is some evidence to suggest that Native California conformed with the global pattern, in that shellfish collection seems to have been the job of women and children. In 1992 I enlisted the help of four female undergraduate archaeology students to come to Big Creek and collect mussels to try to develop some understanding about the potential resource value and pursuit costs associated with mussel exploitation.

We surmised that there must be at least two different ways to collect mussels:

1. pluck only the larger specimens, leaving smaller ones behind
2. strip out entire mussel beds, taking everything *en masse*

FIGURE 8. Experimentally derived cumulative proportions for alternative mussel collection strategies



To evaluate these two strategies the students collected mussels in these two ways under controlled conditions. One person would collect for 20 minutes, just plucking, while another person would collect in the same mussel patch for 20 minutes just stripping. Then they switched strategies. We loaded all the mussels representing these two different strategies into bags and brought them back to camp to quantify the yields. The mussels were boiled to open the shells, which is the most likely way they were processed prehistorically. Meats were then removed and the amount of time for total processing was recorded. Meat yields versus processing times were quantified for each strategy. We also measured all of the shells from both collections and developed size profiles associated with each strategy (Figure 8), using the cumulative proportion representation used by mussel biologists. This allowed us to compare the collected populations with the size profiles associated with living populations. This experiment was also repeated in Santa Cruz County at Davenport Landing, where people are actively harvesting mussels all the

time—which contrasts with the Big Creek mussel beds which hadn't been subjected to human predation in at least 20–30 years.

The data showed a number of patterns. First of all, the expected differences in size profiles of the mussels were evident. With the stripping strategy, there were many more smaller individuals and a much smaller average size; with plucking, there were more larger individuals. The two strategies produced different curves.

Also, in terms of net efficiency—how much effort it takes to obtain and process mussels versus food returns in kilocalories—plucking is superior. However, in terms of absolute food value, stripping gives you the greatest amount of food, especially in a setting that is regularly harvested. With regularly exploited mussel beds, if collectors were willing to devote the time to processing—that is spending the time to get the meat out of the little mussels—the greatest total food value would be obtained using the stripping strategy (Table 1).

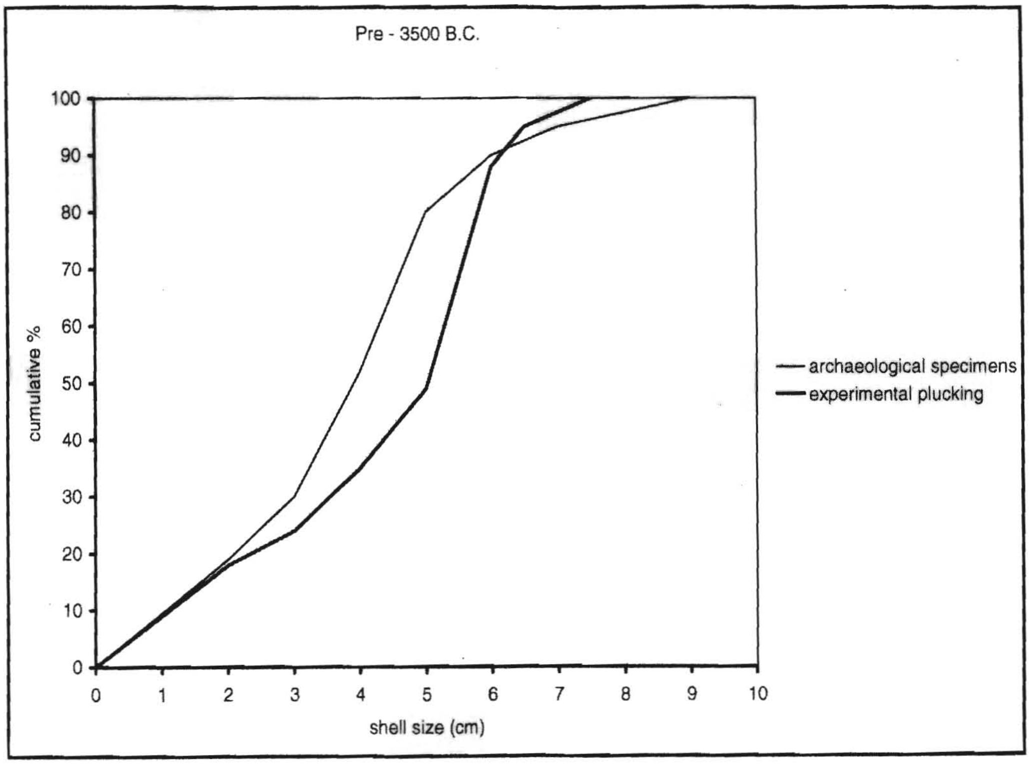
TABLE 1. *Experimental Mussel Collection Results (from Jones and Richman 1995).*

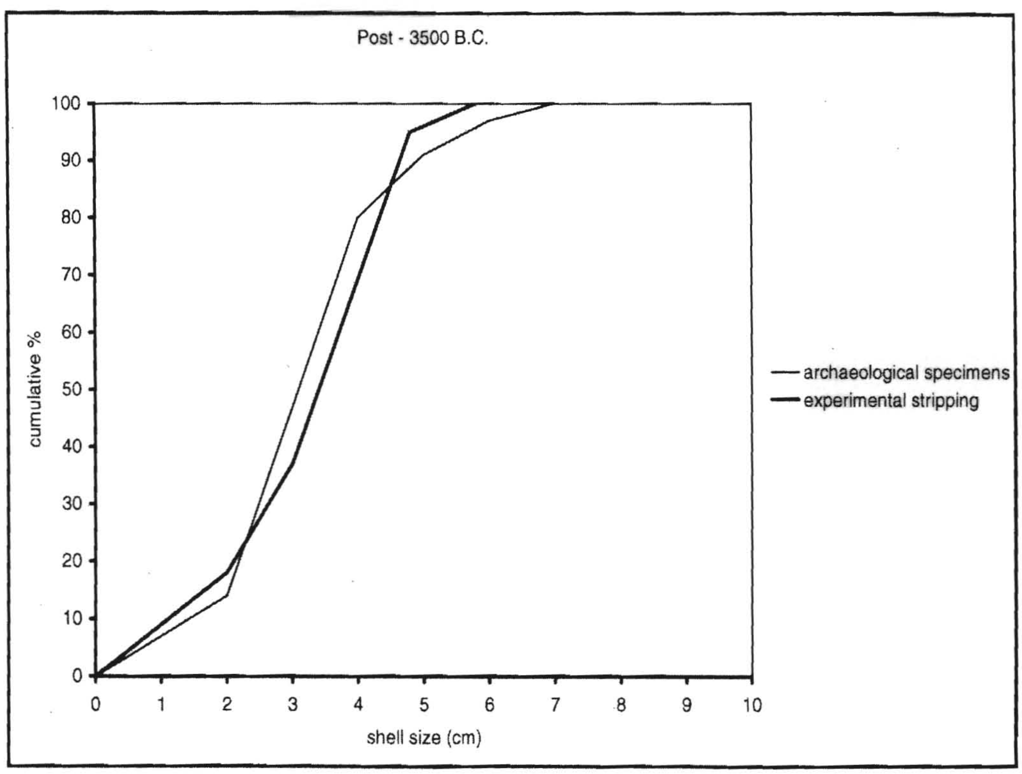
Setting	Foraging strategy	Energy value of food/ time collecting & processing (Kcal/hr)	Total energy value of food (Kcal)
Big Creek	Plucking	543.2	543.2
Big Creek	Stripping	214.2	396.4
Davenport Landing	Plucking	574.2	650.1
Davenport Landing	Stripping	445.9	865.7

The experimentally-derived mussel size curves were then compared with size curves obtained from over 10,000 mussel shells from Big Creek archaeological sites. The results of this comparison showed that from site after site after site, the experimental stripping curve and the archeological curve matched almost exactly (Figure 9). At least 90% of the archeological deposits showed that people were using the non-efficient stripping strategy for exploiting mussels.

There were, however, two sites for which the archaeological curve of shell sizes was closer to the experimental curve for plucking. The average size of the mussels in the oldest deposit, from the Millingstone period 5500 to 6400 years ago, suggests that in the Milling Stone period people used a strategy akin to plucking. With the onset of the Hunting Culture, however, there was a decline in the mean shell size and a shift from plucking to stripping. For the next 4000 to 5000 years, the mean size was very constant. The only other place where there was evidence for plucking was from an historic site at the mouth of the Big Sur River that was occupied from about 1800 to 1815 by a small band of mission refugees. The people there were the last members of a disappearing native population, and were likely harvesting mussel beds that were otherwise decreasingly subjected to human foraging.

FIGURE 9. Results of harvesting strategy study





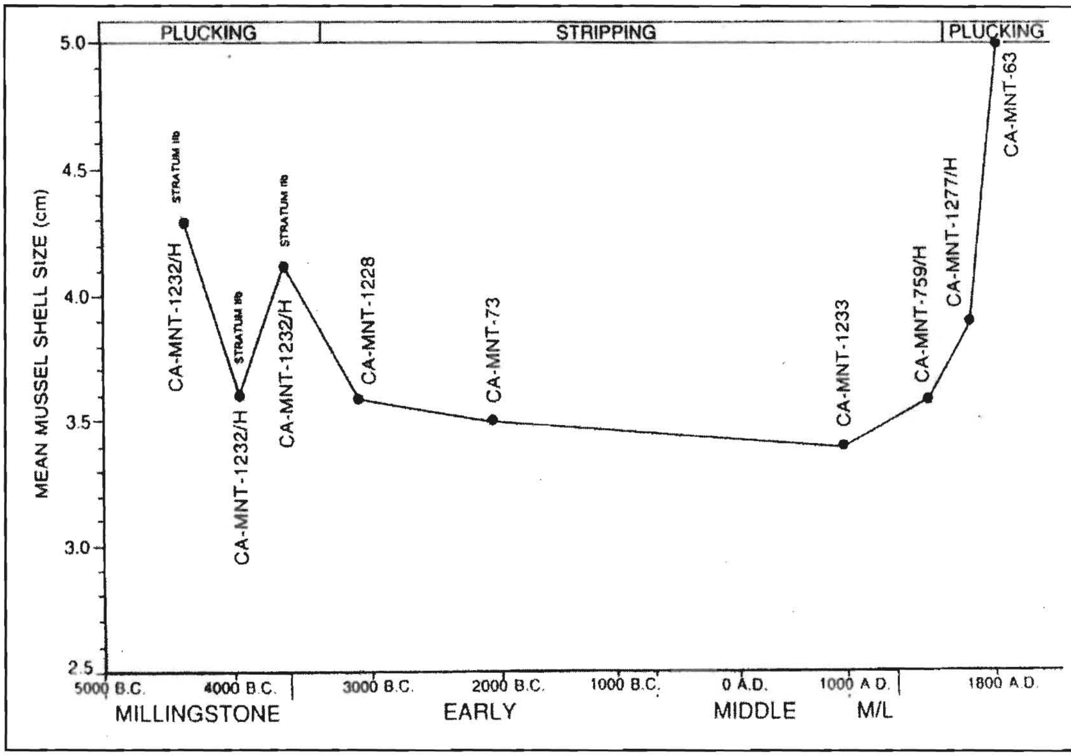


FIGURE 10. Mussel harvesting strategies and mean shell size, Big Sur coast 4400 B.C.–A.D. 1830

Conclusions

So how did these experiments and other research aid in the evaluation of prehistoric change at Big Creek? The major transition from the Milling Stone Culture to Hunting Culture at 3500 B.C. was associated with a shift from a selective strategy for collection of mussels to a more labor-intensive strategy. Consistent with changes in tool and faunal assemblages, this shift in strategy suggests economic intensification by a resident group. Bowl mortars, for example, which made their first appearance with the Hunting Culture, are generally considered to represent intensive food processing. Fish also are a resource that require increased labor to catch and process, and the Hunting Culture shows increased reliance on piscine resources. These trends suggest that prior to 3500 B.C., Milling Stone people were probably relatively mobile with low population densities, which allowed them to be more selective in their harvest of mussels and other resources. After 3500 B.C. they shifted to stripping—a strategy that is less efficient, but allows for the acquisition of more food.

Paleoenvironmental change cannot be entirely ruled out as an influence over the economic and cultural changes that occurred at 3500 B.C. in the Big Creek area largely because so little is actually known about conditions in terrestrial and marine habits in the Big Sur area through the Holocene. Western North America clearly experienced an extended period of warmer drier climate during the early–mid Holocene. As a working hypothesis, however, it is

argued that climatic variation was not severe enough on the central coast of California to in itself foster major cultural changes (Jones and Waugh 1997). At approximately 3400 B.C. in the Santa Barbara Channel to the south, there is evidence for a decline in sea water temperatures (Glassow et al. 1994). Mussels prosper in cold water, so the decrease/decline in shell size that marks the Milling Stone/Hunting transition at Big Creek seems more a reflection of changes in human foraging strategies than in the ambient environment (Jones 1996).

The possibility that these changes reflect the arrival of a new ethnic group to the Big Sur coast cannot be entirely ruled out, since the distribution of language groups in Native California clearly indicates a long history of multiple population movements (see Moratto 1984). While data from Big Creek are not robust enough to define prehistoric ethnic identities with any confidence, some patterns are apparent from surrounding areas where economic changes are also evident ca. 3500 B.C. Data from the Monterey Peninsula (e.g., the Hunting Culture cemetery at CA-MNT-391 [Cartier 1993]), the San Francisco Bay area (Milling Stone burials from CA-SCL-65 [Fitzgerald 1993]) and San Luis Obispo County (Milling Stone components at CA-SLO-1756 [Fitzgerald 1997] and CA-SLO-1797 [Fitzgerald 1999]) show striking differences between the Milling Stone and Hunting Culture. The former is consistently marked by a distinctive assemblage of crude core and flake tools with few bifaces. Burial practices included the interment of individuals beneath cairns of milling stones. The Hunting Culture, on the other hand, is marked by a profusion of stemmed projectile points, and cairn burial was not practiced. Such differences in style and mortuary practice suggest that the Hunting Culture could represent a different ethnic group that intruded on to the central California coast around 3500 B.C.

The second interval of major change at Big Creek ca. A.D. 1300 is also marked by the appearance of a distinctive suite of new artifact types, but the character of economic shifts was different. Mussel harvesting strategies do not show qualitative differences, but mean mussel size increased slightly after A.D. 1300, and more significantly by ca. A.D. 1800. People living on the coast in the earliest historic era—when human population density was extremely low—seem to have employed a plucking strategy. The more significant subsistence changes at A.D. 1300 included a decreased emphasis on fishing and increased exploitation of terrestrial habitats. While it is possible that these shifts again reflect economic intensification, as people focused more intently on such labor-intensive terrestrial foods as acorns (Hildebrandt and Jones 1992; Jones and Hildebrandt 1995), the decrease in fishing seems to contrast with such a conclusion. Environmental change may have been a more significant factor at this juncture in Big Creek prehistory than it had been previously. Two independent studies have provided compelling evidence for prolonged and severe drought in the Sierra Nevada between A.D. 1200 and 1350. Historic rainfall records also show that the South Coast Ranges and the Sierra Nevada experience the same trends in rainfall. Oxygen isotope studies from Big Creek mussel shells also suggest unusual sea temperatures off the coast between A.D. 1300 and 1500. Many changes in the archaeological record ca. A.D. 1000–1400 may reflect subsistence problems, decrease in human population, and a reversal of previous trends of economic intensification. The co-occurrence of

serious climatic flux (particularly drought), with major changes in diet and settlement ca. A.D. 1000 and 1400 is difficult to overlook. The following Salinan myth provided by Maria Ocarpia, an elderly Salinan speaker, to J. Alden Mason in 1916 provides a hint of what may have transpired during the early centuries of this millennium:

> *Once there was a famine....there was no rain and no food. They ate bleached bones pounded in the mortar, and acorn mush made of manzanitas. There were no deer and no meat; it was a great famine. The poor people ate alfilerillo seeds. One old woman killed and roasted and ate her son; [sic] was very hungry. Then her brother came and killed her with three arrows because she had eaten her child. They did not bury her, but left her to be eaten by the coyotes. It was a great famine. But the people who lived on the shore did not die because they ate abalones. But even they were thin because they had nothing but sea-weed to eat* [Maria Ocarpia as reported by Mason 1918:120].

While such sources must be regarded with caution, as they can combine facts with fantasy and cannot be dated, the possibility exists that this myth describes drought of the late Medieval Period (A.D.1200–1350). At the very least this myth could be an analog for effects of catastrophic droughts in the prehistoric past. Alfilerillo seeds are filaree (*Erodium* spp.), most of which are non-Natives introduced from Europe, so this account may refer directly only to a post-contact drought, possibly the historic drought of 1863. However, it may too provide an accurate assessment of the relative impact of drought on marine and terrestrial resources and the degree of human stress that could result from such an event. Similar myths are known from the Chumash (Walker et al. 1989:351), Pomo (Kniffen 1939:366), and Shoshone (Steward 1938:20). The abrupt transitions in the archaeological record ca. A.D. 1200–1400 are consistent with extreme resource stress and possibly a brief, rapid decrease in human population. In the face of extreme drought, the already intensified, partially marine-focused economy could no longer provide an ample resource base. Groups escaping the intolerable conditions of the interior may have fled to the Big Sur coast, evidenced by the first appearance of many sites on the coastal flank of the Santa Lucias between A.D. 1100 and 1500. In both the interior and on the coast, famine may have contributed to increased death rates, decreased birth rates, competition for resources, and a decline in population.

Of course, whether or not crises, famine, or population migrations actually occurred at Big Creek or the central California coast in general are at this point matters of speculation. Only 25% of Big Creek prehistoric sites have been excavated, and data from many of these are meager. Most of the Big Sur coast and adjacent interior remain unsurveyed for archaeological sites, and there can be little doubt that hundreds of sites remain to be discovered. At present, the available record shows evidence for a fairly distinctive change in artifact inventories and a disruption in settlement ca. A.D. 1250, coincident with signs of drought in the interior ranges of California. Much more research on local paleoenvironment and settlement patterns needs to be completed to fully evaluate the hypothesis of drought-induced culture change.

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