A TENTATIVE CULTURE-HISTORICAL SEQUENCE

FOR THE MOKELUMNE RIVER CANYON

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ABSTRACT

Test excavations at six sites on the North Fork of the Mokelumne River ranging in elevation from 4000 to 8000 feet reveal a 2500+ year sequence divided into three periods on the basis of seriation of flaked stone raw materials, radiocarbon dating, obsidian hydration, and typological comparison. The following periods have been defined:

Blue Lakes Phase (ca. 2500 BP? - 1500 BP)
Mokelumne Phase (ca. 1500 BP - 750 BP)
Amador Phase (ca. 750 BP - 150 BP)

These phases correlate with changes in interaction spheres and proposed climatic changes. A possible divergence in the sequence between the upper elevations and middle elevations suggests population movements generally consistent with Moratto's (1984) model.

The Mokelumne River and its tributaries form one of the major drainage basins of the north-central Sierra Nevada. The North Fork of the Mokelumne, the focus of the present study, has its headwaters at Ebbitts Pass and in the Blue Lakes area. The Blue Lakes lie just south of Hope, Faith, and Charity valleys, which in turn are just over the mountain from Lake Tahoe. The study area lies roughly between the Route 4 and Route 88 trans-Sierran highways.

Between 1980 and 1985, I directed a series of cultural resources studies (Wirth Associates 1981, 1982; Wirth Environmental Services 1983, 1985) along the Mokelumne under contract with Pacific Gas and Electric Company, which operates a hydroelectric project on the river. My paper focuses on limited test excavations of six sites: Alp-155 and 167, which are located in the red fir forest of the Blue Lakes area at around 8000 feet, and Ama-110, 235 and 237, and Cal-312, which were located in the mixed hardwood/yellow pine forest near Salt Springs Reservoir between 3300 and 4000 feet.

Alp-155 and 167 appear to be the remains of high-altitude temporary campsites. Soils on the Blue Lakes area are shallow, and the cultural materials at these sites are confined to the upper 30 cm or so, but these shallow deposits appear to compress at least 2000 years of human occupation. Small flaking debitage comprises the vast majority of the assemblage, but a variety of flaked stone tools are also present, including projectile points, edge-utilized flakes, and percussion flaked bifaces that may be either unfinished tools or edge tools. Obsidian from the Bodie Hills source is the most common raw material utilized in the flaked stone industry, comprising about 80% of the total. Chert is the next most common material type. Portable groundstone was very rare, confined to a single mano from Alp-167. A few shallow bedrock mortars were identified at both sites. No faunal or marcofloral remains were recovered, despite flotation efforts. Data from Alp-155 and 167 are supplemented by that from several lower density lithic scatters found in similar lakeshore settings. These lithic scatters may be functionally homologous with Alp-155 and 167, only located in somewhat less favorable settings resulting in less frequently repeated reuse.

As no material suitable for radiocarbon dating was recovered in the upper elevations, chronological inferences must be based primarily on typological cross-dating, supplemented by obsidian hydration. Interestingly, of twelve typable projectile points recovered during the survey and evaluation of the Blue Lakes area, seven fall within the Elko series and an eighth

in the Martis series. Three are in the Rose Spring or Eastgate series, and only one in the Desert Side-notch series. These results suggest that utilization of the high altitude Blue Lakes area may have been more intensive in the Middle Period than in the Late Period. This is consistent with Elston's findings in the Tahoe basin and with pollen evidence from Blue Lakes and elsewhere on the Sierra crest suggesting neoglacial cooling over the past 3000 years (Adam 1967; Davis 1985). On the other hand, the reduction in projectile point frequency may result from a change in subsistence from hunting to fishing as suggested by Heizer and Elsasser (1953) for the Tahoe basin. Obsidian hydration has the potential to shed light on this issue, but insufficient hydration analysis is currently available from the Sierra crest to provide an adequate comparative data-base.

A very different archaeological pattern was found in the middle elevations of the western Sierra. Salient differences include: (1) a high incidence of permanent or semi-permanent habitation sites as evidenced by midden accumulation, architecture, and a high frequency of bedrock milling features, (2) a wider variety of artifact classes, (3) fuller ecofactual evidence of subsistence practices, (4) lower overall frequency of obsidian, although still overwhelmingly from the Bodie Hills source, and (5) different pattern of cultural change. These differences occur over roughly the same time period as evidenced in the Blue Lakes areas. Radiocarbon analysis documents at least a 2500 year occupation sequence at the sites tested. Older materials may be present but have not been documented.

Although the middle elevation sites provide ample data for discussion of a variety of problems in Sierran archaeology, I am going to focus on cultural change. The rockshelter at Ama-110A yielded a nice series of radiocarbon dates: 1660 $\pm$ 80 uncorrected from the 110-120 cm level (Beta-8507), 1020 $\pm$ 80 from the 60-70 cm level (Beta-8506), 990 $\pm$ 50 from the 50-60 cm level (Beta-8505), and 160 $\pm$ 50 from the 30-40 cm level (Beta-8504). Excavation of the single 1x1 m unit was terminated at 150 cm for safety reasons, but the deposit evidently continues below that level. Although the beads, points, and obsidian hydration readings document a degree of mixing of the deposit, the debitage and soil strata join the radiocarbon evidence in supporting the contention that the deposit is largely intact.

Quartz debitage is abundant throughout the deposit, but reaches overwhelming dominance between 40 cm and 90 cm in a stratum characterized by relatively compact decomposed granite. We have labeled this Stratum 2. Below, Stratum 3 evidences increased frequency of obsidian, and above, Stratum 1 produced increased frequencies of chert. The radiocarbon analysis suggests a Late Period date for Stratum 1, a Rose Spring date for Stratum 2 and a Middle Period date for Stratum 3. The assignment of Stratum 2, with its high frequency of quartz, to the Rose Spring period is supported throughout the middle elevation sites on the Mokelumne by a high frequency of quartz Rose Spring series projectile points. All of the eleven Rose Spring/Eastgate points recovered from Ama-110A were made of quartz.

Although all three periods are not present at all habitation sites tested in the middle elevations, seriation of raw material, radiocarbon dates, and projectile points at other sites supports the following general sequence from earliest to latest:

Period 1 - Chronometric dates of 1600 to 2000 BP; Bodie Hills obsidian relatively abundant; Elko series points present in low frequencies.

Period 2 - Chronometric dates of around 1000 BP; quartz debitage abundant; Bodie Hills obsidian present in decreased frequencies; numerous Rose Spring and Eastgate series projectile points; Olivella small saucer and square saddle beads present in low frequencies.

Period 3 - Chronometric date of 160 BP; Desert Side-notched series points relatively abundant; Cottonwood series points present but in lower frequencies; Bodie Hills obsidian available in increased frequencies; continued use of locally available chert and quartz; spire-lopped and

semi-ground disk Olivella beads; glass trade beads and flaked bottle glass present late in period.

Having identified three basic periods or phases, we were left with a problem of what to call them. When we began the project, we had predicted that the Tahoe sequence (Elston et al. 1977; Heizer and Elsasser 1953) would be most applicable. However, only a single Martis series point was recovered, as compared to numerous contemporaneous Elko-series points. Moreover, the Elko-related phase produced a high frequency of obsidian, while obsidian is rare at Martis period sites in the Tahoe basin. In view of the abundance of obsidian in the Mokelumne drainage as compared to the Tahoe basin, it appears that there is a boundary-effect in the cultural interaction sphere that featured the movement of Bodie Hills obsidian. For these reasons, the Tahoe sequence clearly will not do.

Further afield and to the south is the Yosemite sequence (Bennyhoff 1953, 1956; Fitzwater 1962, 1968), the three periods of which, Crane Flat, Tamarack, and Mariposa, generally correspond to the three periods documented for the Mokelumne. However, the Tamarack phase appears poorly documented at Yosemite, while the contemporaneous period is highly visible in the Mokelumne drainage. Moreover, Yosemite largely falls within a different obsidian interaction sphere than does the Mokelumne.

My general position is that we need to build chronologies on two levels: the local and the regional. On the local level we should seek a high degree of cultural uniformity in technology, settlement/subsistence, and stylistic attributes. Presumably at any point in time, the area encompassed by a local sequence represents the remains of social groups maintaining a high degree of cultural interaction. On the regional level, we need to relate local sequences into overall periods of contemporaneity based on as much as possible on chronometric measures. Given regional interaction, regional periods should reflect a moderate degree of technological and stylistic homogeneity. The main use of regional chronologies should be to simplify space-time systematics into a reasonably intelligible framework. For the Sierra, we have a ways to go in this respect.

With this perspective in view, I have been so bold as to propose a local sequence for the Mokelumne drainage (see Figure 1). At present it is not clear exactly how large an area this local sequence covers. It is clear, however, that differences occur between the Blue Lakes and Salt Springs area. Hence, at any point in time two or more local sequences may be applicable in the same drainage from the foothills to the Sierra crest. Consequently, I will discuss each area investigated separately.

The earliest documented period (2500 BP? - 1500 BP) is designated the Blue Lakes Phase in recognition of the apparent fluorescence of prehistoric activities in that area during this phase. Twice as many Elko series points have been recovered from the Blue Lakes area than from the Salt Springs area despite a greater amount of investigation in the latter. Based on our admittedly limited sample, it appears that activities resulting in projectile point discard in sites were more intensive in the upper elevations than in the middle elevations during this phase. Despite this difference, I am inclined to include the middle elevations within the spatial distribution of the Blue Lakes Phase simply for lack of a good reason to split it off. Incidentally, the beginning date for this period is poorly defined and may be considerably earlier than 2500 BP. The 2500 figure has been used because it is the earliest date that can be inferred at present from local chronometric measures.

The following Mokelumne Phase (1500 - 750 BP) is probably one of differentiation between the middle and upper elevations. In the middle elevations there is strong evidence of greatly increased population density, while utilization of the upper elevations appears to be reduced. Moreover, the frequencies Bodie Hills obsidian declines in the middle elevations but remains high at Blue Lakes, suggesting a change in cultural interaction spheres. By ethnographic times, the two areas were parts of two distinct ethnic territories: the Blue Lakes were utilized primarily by the Washo, the Salt Springs primarily by the Miwok. For this reason I have indicated the possibility that the Early Kings Beach Phase of the Tahoe sequence may apply to the Blue Lakes, but the middle elevations are sufficiently dissimilar

FIGURE 1

A TENTATIVE CULTURE - HISTORICAL SEQUENCE FOR THE MOKELUMNE RIVER CANYON.

	Blue Lake Area	Salt Springs Area
150 BP		
	Late Kings Beach Phase - Desert Side-notch Series points (rare) - High frequency of Bodie Hills obsidian continues - Fishing camps? - Reduced intensity of use	Amador Phase - Desert Side-notch and Cottonwood series points - Increase in frequency of Bodie Hills obsidian - Continued use of local quartz and chert - Bedrock mortars - Permanent/semi-permanent villages
750 BP		
	Early Kings Beach or Mokelumne Phase - Rose Spring/Eastgate series points - High frequency of Bodie Hills obsidian continues - Possible reduced intensity of use - Settlement pattern poorly known	Mokelumne Phase - Rose Spring/Eastgate series points - Increased utilization of local quartz for flaked stone tools - Decreased frequency of Bodie Hills obsidian - Bedrock mortars - Small saucer and square-saddle Olivella beads - Permanent/semi-permanent villages - Increased settlement intensity
1500 BP		
	Blue Lakes Phase - Elko series points - Martis series points in low frequency - High frequency of Bodie Hills obsidian - High altitude hunting camps - Relatively intensive use	Blue Lake Phase? - Elko series points - Relatively high frequency of Bodie Hills obsidian - Pit and groove petro-glyphs (?) - Bedrock mortars (?) - Acorn exploitation - Settlement patterns poorly known
2500 BP	- ? - - - ? - - - ? - - - ? - - - ? - - - ? - - - ? - - - ? -	

that I have suggested the term "Mokelumne Phase" in recognition of the fluorescence of utilization that apparently occurred in Mokelumne Canyon during this period. The actual dating of this split remains a question mark and could have occurred either earlier or later.

In the latest period, two spatially separate phase designations are clearly appropriate based on both ethnographic and archaeological grounds. The latest materials from Blue Lakes conform well to the Late Kings Beach Phase at Tahoe, and I have simply expanded the spatial dimension of that phase to include Blue Lakes.

In the middle elevations, cultural continuity with the previous period is apparent. However, new artifact types were introduced, and there may have been a reduction in settlement intensity, although certainly not back to previous levels. I have suggested the term Amador Phase for this late period time-frame (750 BP - 150 BP).

By focusing attention on local sequences, we lay the groundwork for the testing of processual models in regional prehistory. We may be able to establish culture-historical frameworks of sufficiently fine grain for decent comparative studies. For example, the Raymond Phase at Buchanan Reservoir corresponds in absolute time to the Mokelumne Phase on the Mokelumne. Both would fall within a single regional temporal unit. However, at Buchanan this was a period of reduction in settlement intensity while the opposite is true on the Mokelumne. Moratto (1972, 1984) has correlated population decline at Buchanan with a period of increased aridity, suggesting an environmental explanation. Buchanan Reservoir is in the foothills, whereas the Mokelumne Phase sites are in the middle elevations. Adam (1967) has suggested that Holocene climatic change in the Sierra would probably have been manifested in altitudinal shifts of biotic communities. Periods of increased temperature or decreased moisture would see the upward shift of biota. Such a shift may account for, if not explain entirely the reduction of human populations in the foothills and their contemporaneous expansion in the middle elevations. A reevaluation of the Camanche Reservoir data (Johnson 1967) from the Mokelumne foothills would be critical in confirming the accuracy of proposed population shifts in the north-central Sierra.

REFERENCES CITED

Adam, David P.
1967 Late Pleistocene and Recent Palynology in the Central Sierra Nevada, California. In Quaternary Paleoecology, edited by E.J. Cushing and H.E. Wright, Jr., pp. 275-301. Yale University Press, New Haven.

Bennyhoff, James A.
1953 High Altitude Occupation in the Yosemite Park Region. University of California Archaeological Survey Reports 21:31-32. Berkeley.

1956 An Appraisal of the Archaeological Resources of Yosemite National Park. University of California Archaeological Survey Reports 34:1-71. Berkeley.

Davis, Owen K.
1985 Analysis of Pollen Samples from the Mokelumne River Project. In Mokelumne River Project: Cultural Resources Evaluation. Ms. on file, Pacific Gas and Electric Company, San Francisco.

Elston, Robert, Jonathan O. Davis, Alan Leventhal, and Cameron Covington
1977 The Archaeology of the Tahoe Reach of the Truckee River. Northern Division of the Nevada Archaeological Survey, University of Nevada, Reno.

Fitzwater, Robert J.
1962 Final Report on Two Seasons' Excavation at El Portal, Mariposa County, California. University of California Archaeological Survey Annual Report 1961-1962:235-282. Los Angeles.

1968 Big Oak Flat: Two Archaeological Sites in Yosemite National Park. University of California Archaeological Survey Annual Report 10:275-314. Los Angeles.

Heizer, Robert F., and Albert B. Elsasser
1953 Some Archaeological Sites and Cultures of the Central Sierra Nevada. University of California Archaeological Survey Reports 21. Berkeley.

Johnson, Jerald J.
1967 The Archeology of the Camanche Reservoir Locality, California. Sacramento Anthropological Society Paper 6(1).

Moratto, Michael J.
1972 A Study of the Prehistory in the Southern Sierra Nevada Foothills. Unpublished Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene.

1984 California Archaeology. Academic Press, New York.

Wirth Associates
1981 Mokelumne River Project Cultural Resources Report. Pacific Gas and Electric Company, San Francisco.

1982 Mokelumne River Project Cultural Resources Report: Native American Cultural Resources. Pacific Gas and Electric Company, San Francisco.

Wirth Environmental Services
1983 Mokelumne River Project: Cultural Resources Management Plan. Pacific Gas and Electric Company, San Francisco.

1985 Mokelumne River Project: Cultural Resources Evaluation Program. Pacific Gas and Electric Company, San Francisco.