AN ANTHROPOLOGICAL OVERVIEW AND CULTURAL RESOURCES INVENTORY

of the

NORTHERN SACRAMENTO VALLEY AND SOUTHERN CASCADE RANGE

by

Peter M. Jensen
Research Archaeologist

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Prepared for the Department of the Interior

Bureau of Land Management

Redding District Office CA-030

Contract No. CA-030-CT8-004

-February 1979-

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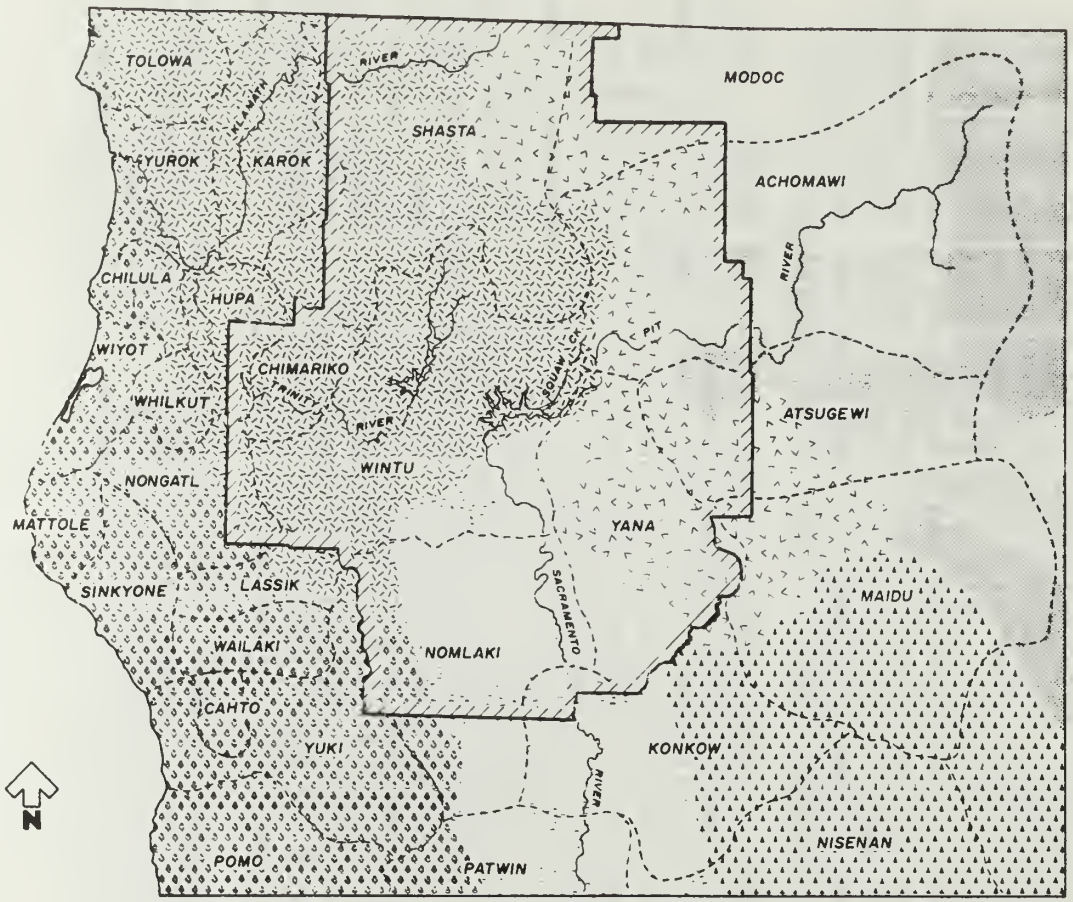
I

INTRODUCTION

The Northern Sacramento Valley and Southern Cascade Range Inventory Area (hereinafter referred to as the Inventory Area) as defined by the Bureau of Land Management (Map 1) includes all or portions of Siskiyou, Shasta, Trinity, and Tehama Counties. Whether we employ physiographic, climatological, ethnographic or archaeological criteria, this large tract includes a number of distinct subareas. The western portion of the Inventory Area includes part of the northern Sacramento Valley, the eastern flank of the north Coast Ranges, as well as the southernmost tip of the Klamath range; this area was once occupied by Nomlaki, Wintu and several additional Native American groups of Shasta linguistic affiliation. The eastern portion of the Inventory Area is dominated by parts of the southern Cascade Range and the western-most section of the Modoc Plateau; this territory once belonged to the Yana, the Atsugewi, Achomawi and the Modoc. At the northern end of the Inventory Area occur the southern Cascade Ranges and parts of the Klamath Mountains, and includes territory occupied by various Shasta aboriginal groups. The southern and central portions of the Inventory Area include parts of the northern Sacramento Valley which is dominated by the Sacramento River drainage and whose principal occupants were the Wintu and Nomlaki.

In compiling the present report, we have found that the area is characterized by little systematic knowledge of its prehistory. Significant excavations and surveys have been undertaken within the area by a number of individuals and private firms and a larger number of public institutions. However, many of the excavated materials were found to be incompletely reported, if published at all. Moreover, the quality of our knowledge of prehistoric site locations within the Inventory Area is quite variable. Site location data from pre-1970 archaeological surveys seems to be the most unpredictable with regard to accuracy of map placement. Nevertheless, available archaeological inventories were generally discovered to be in somewhat better shape than our systematic knowledge of regional prehistory, oweing largely to the efforts of the Society for California Archaeology and support to that agency provided by the State of California.

As indicated in Map 1 and elsewhere within this report, the Inventory Area incorporates a host of ethnographically- and archaeologically-defined cultures. While many of the aboriginal occupants of this area spoke related languages and



PHYSIOGRAPHIC PROVINCES

- GREAT VALLEY
- SIERRA NEVADA
- COAST RANGE
- KLAMATH MTNS.
- CASCADE RANGE
- MODOC PLATEAU
- GREAT BASIN

- OVERVIEW AREA
- ETHNOGRAPHIC BOUNDARIES
- YANA TRIBAL NAMES
- RIVERS

MAP 1
ANTHROPOLOGICAL OVERVIEW AREA

WITH PHYSIOGRAPHIC PROVINCES[1]
AND ETHNOGRAPHIC BOUNDARIES[2]

10 5 0 10 20 30 40 50 MILES

10 5 0 10 20 30 40 50 60 70 KILOMETERS

[1] MACDONALD 1966
[2] HEIZER 1978

shared a large number of cultural, social, economic, and technological traits, there were clearly some important differences between them, not the least of which was the fact that each recognized itself as a distinct socio-political entity. This latter fact has increased rather than decreased the level of complexity facing the ethnographers and archaeologists attempting to reconstruct and understand past lifeways within the region. There is no escaping the fact that in order to deal effectively with the prehistory of this area, separate and perhaps somewhat discrete patterns of cultural development and change will have to be identified and the internal details of local sequences understood. After all, what was happening within the North Coast Ranges at, say 1,000 B.C., was different from what was simultaneously happening within the Sierra Nevada foothills. At the same time, however, the occupants of these two areas as well as the occupants within all of northern California were undoubtedly linked with one another through trade and a variety of other mechanisms. In addition, while all of northern California's aboriginal groups were affected by broad, long-term changes and/or fluctuations in general climatic conditions within the region, each of these groups was at the same time adapted to a set of resources itself dependent on localized micro-environmental variables.

The problem for the anthropologist, then, is to attempt to piece together particular developmental patterns while not losing sight of the larger picture. To this end, the authors have decided to begin this report by outlining the general environmental history of the area as a backdrop against which to examine the area's history and prehistory. In this section we shall attempt to emphasize those questions which need answering if we are to fully understand man's interaction with his environment within this part of northern California. We then travel back through the ethnohistoric and ethnographic periods, thereby also laying the foundation for initial interpretation of local archaeological patterns and complexes. Following this we deal with each of the archaeological patterns currently evident within and in part predicted by the available ethnographic materials for the region; in each case we trace these more localized sequences back in time until they disappear or merge with the broad, less well-defined pattern of prehistoric occupation characteristic of the region during the period of initial peopling of this part of the State.

Following the discussion of the known ethnographic and archaeological materials and complexes for the various areas incorporated within the Inventory Area, we discuss the future of northern California archaeology, with particular attention given to the threats imposed to it as a resource and to its potential for science and for the public. It is hoped that this evaluation of the resource potential will help guide future regional archaeological inventory and research undertakings within the region.

II

PHYSICAL AND NATURAL ENVIRONMENT

Introduction

Within California can be found nearly every combination and every contrasting extreme of topography, climate, soils, and natural resources existing elsewhere within the United States, as well as some that are peculiar to this State. Many of these patterns are evident within northern California generally, with a large number being represented within the Inventory Area specifically. This diversity of physical environment and resources gives California an economic stability that is no less unique today than it was during ethnographic and prehistoric times. At the same time, the great differences between the various regions make any general description of the Inventory Area almost meaningless.

The diversified topography, wide differences in climate and great variations in soil all influenced the distribution and composition of the plant cover and the dependent animal life, including humans. Thus, a general understanding of the physical conditions which so greatly affected the economic resources available to the aboriginal occupants of this area is fundamental to any discussion and understanding of the long term cultural processes and changes which highlight the archaeological record of the region.

Physiographic Regions

The Inventory Area includes portions of several distinct physiographic regions. The physiographic regions, or portions thereof, represented within this Inventory Area include the western portion of the Modoc Plateau, portions of the southern Cascade Range and Klamath Mountains, and the northernmost section of the Sacramento Valley. The Inventory Area skirts the easternmost flanks of the North Coast Range and the northwestern tip of the northern Sierra Nevada mountains, thus excluding both these areas from inclusion within its boundaries.

Klamath Mountains. The Klamath Mountains occupy the northwestern corner of California, lying immediately north of the Coast Ranges and extending into Oregon. The region is generally quite rugged, with few flat spots or gradients under 40%. Swiftly falling spring-fed streams drain into the Klamath and Trinity, the two principal rivers within

the Klamath Mountains within California, with portions of the latter falling within the Inventory Area. Most of the canyons, particularly those associated with the Trinity and Klamath Rivers, are deep and narrow, with peaks and ridges rising steeply above. The mountain masses within the region include clusters of high peaks, such as the Trinity Alps and Shasta Bolly Mountain ranging in elevation from about 5905 to 8858 feet above mean sea level. More generalized summits within the Klamath Mountains range from 2952.5 to 5905 feet (Hinds 1952). The Klamath range, together with the north Coast Ranges, serve to block the path of the moisture laden winds entering California from the Pacific; this fact accounts in part for the generally moderate to heavy precipitation occurring within the region which in turn is partially responsible for the large biomass, discussed below. Most of the precipitation within the region drains westward to the Pacific Ocean through deep canyons of the Klamath and Trinity Rivers in California. The easternmost portion of the Klamath Mountains is drained to the south by the Sacramento River. For the most part, drainage within the region is transverse to the lithic and structural grain of the region (ibid.).

The Klamath Mountains region is one of the most complex geological areas in North America. While synthesis of the metamorphic and plutonic history of the Klamath Mountains is not yet complete, at this time it appears that there were two major regionwide periods of metamorphism, deformation, and igneous intrusion, with the first dated isotopically from Late Pennsylvanian to Early or Middle Triassic, and the second to Late Jurassic. The affect of these ancient and complex geologic events has been the creation within the region of many individual mountain ranges, including the Trinity, South Fork, Salmon, Trinity Alps, Scott, Scott Bar, and Marble Mountains. The Siskiyou Mountains represent one more of these individual ranges located within the extreme northern end of the Inventory Area and which traverse the California-Oregon border.

Quarter deposits are widespread throughout the region, with alluvial deposits of sand and gravel occurring along the courses of the major rivers and their tributaries, both in the beds of the streams and on terrace remnants of earlier levels. Scott Valley, located within the northwest

section of the Inventory Area, represents the only extensive area of valley fill and contains alluvial fan deposits estimated at more than 400 feet thick (Olmstead 1956, cited in Irwin 1966:30). Early interest in these gravels was spurred by the discovery of placer gold at the mouth of Reading Creek in 1848 which in turn led to wide-spread prospecting and Euroamerican settlement within the Klamath region by 1850. As a result of continued economic interests in the gravels, they were studied along the upper reaches of the Trinity River (Diller 1911, 1914) and elsewhere within the region. Fossil bones and shells of Pleistocene age have been identified within the carbonaceous layer underlying many of these gravels; the bones represent mammoths, deer, and ground sloths. Many of the shells recovered represent living fresh-water species (Diller 1911).

Additionally, evidence of extensive alpine glaciation is abundant within the higher ranges of the Klamath Mountains, although all glaciers are now extinct except for two small Trinity Alps examples. Sharp's (1960) detailed studies of glaciation in the Trinity Alps resulted in the recognition of four glacial episodes, of which the three youngest are probably Wisconsin in age and the oldest probably pre-Wisconsin. During the youngest episode there were apparently about 30 valley glaciers in the Trinity Alps area alone. The longest glacier recorded by Sharp was estimated to have been approximately 13.7 miles in length and to have occupied the valley of Swift Creek during a pre-Wisconsin glacial episode. Associated with the large number of glaciers within the Trinity Alps and elsewhere were numerous moraines, as well as debris flows that extended down the valleys from the glaciers. For the most part, glacial affects are not noted below about 5,500 feet within the Klamath Mountains, although cirques have been recorded near the south end of South Fork Mountain on the east side of the ridge at an altitude of 5,200 feet above sea level (Irwin 1966:31).

In addition to representing one of the most complex geological areas in North America, the Klamath region supports a highly diversified flora and fauna, and includes one of the largest numbers of species of any area of comparable size on the continent (Jepson 1963). As Schenck and Gifford (1952) note, of the 238 species of plants which were used by the Karok (a group which occupied territory adjacent to but outside of the Inventory Area), approximately

100 were used by the Karok for food. However, none of the species occurred abundantly enough to have served as staples. As elsewhere within California, acorns were the single most important plant food among the Karok and other Northwest California groups, although acorns were not as abundant within the Klamath Mountains region as they were in many other parts of the State.

While the Klamath Mountains region supported a very large biomass, in terms of human needs the region provided comparatively small quantities of edible plant and animal resources. As Tatlock (1966:3) notes, the tonnage of usable meat protein per unit area within much of the Klamath Mountains region was lower than most other parts of California. This fact, in turn, is based in large part on the characteristics of the Douglas fir and other forests which dominate the region and which offer too little food to support large herbivores in large numbers.

The Douglas fir forest is the southward extension of a forest community which reaches into British Columbia and which attains its maximum development in Oregon and Washington. While this forest lies mostly to the east of the redwood forest and at elevations below about 4,500 feet, it reaches to the coast and almost to sea level in some areas of northwestern California. Generally, the forest attains its best development on north and east slopes, where it frequently forms pure stands of trees reaching 200 feet in height and producing a canopy closure ranging from 60 to 100 percent. Douglas fir is frequently intermixed with sugar pine, some incense cedar and white fir, with Pacific dogwood occasionally being present.

Of most significance for the present discussion is the fact that the shrub layer associated with the Douglas fir forest is usually very sparse except for some localized brush stands. Rhododendron, coffeeberry, cluster rose, Marshall's gooseberry, and California hazel constitute the primary species within much of the Klamath Mountains' Douglas fir forest.

The Yellow Pine Forest represents a second major vegetation type which inhabits a large number of xeric sites characterized by higher elevations, steeper slopes, ridge tops, higher amounts of exposure, and serpentinized parent

material. Characteristic tree species include sugar pine, western whitepine, Jeffrey pine, incense cedar, white fir, and Douglas fir. A significant brush layer, consisting of pine-mat manzanita, huckleberry oak, greenleaf manzanita, Sadler oak, serviceberry and a variety of other species is a dominant feature of the Yellow Pine Forest.

The Red Fir Forest is a third vegetation type within the region and usually occurs at elevations in excess of about 5,000 feet. This forest dominates in areas with cooler temperatures and less exposed topography. The dominant tree species are Shasta fir, western white pine, and Jeffrey pine, with some spruce occurring in localized stands. The stands are dense, as with the Douglas fir forest, with canopy closure as high as 95 percent.

Serpentine barrens support a fourth major vegetation type within the region. However, areas with serpentine intrusion support a very limited range of plant species due to the high magnesium, low calcium composition of this parent material. The result is a population of endemic plants with limited distribution. The vegetation type is dominated by perennial and annual herbs which provide some seasonal forage for some animal species.

Meadows and seeps support a fifth vegetation type which is found within all three forest types as well as on and off serpentine. Usually the meadows are found along the margins of perennial streams and intermittent creeks and around ponds. The tree species associated with the meadows are heavily influenced by the surrounding vegetation, although Douglas fir is perhaps the most commonly encountered species. Herbs are the primary form of vegetation found in meadows which are characterized by high species diversity.

The wide variation in elevation, slope, moisture regimes, soil types and vegetative communities (outlined above) within the Klamath Mountains region provide a number of distinct habitats and habitat niches for wildlife. Some animal species which were important to prehistoric and ethnographic populations possess wide tolerance ranges and are able to adapt to many different habitat types; other species have narrower tolerance ranges and are restricted to fewer habitat types.

The Douglas fir forests constitute the most widespread vegetation community and habitat type represented within the region. While the understory vegetation varies with the canopy density of particular forest stands, for the most part the understory is often limited to a few number of sparsely represented species. This greatly reduces the carrying capacity of this vegetation community in terms of gross tonnage of usable animal protein supportable. However, species diversity is relatively high, with many species of wildlife utilizing the coniferous trees as a food source, including seed-eating mammals and numerous avian species. In addition, the forests support large populations of plant-eating insects, which in turn provide a food source for a variety of insectivorous mammals and birds. Lastly, a variety of species of wildlife rely directly on the understory vegetation for most of their subsistence although supplementing their diet with insects and other food sources; examples of such species include bear, beaver, shrews, squirrels, and a variety of avian species including jays and pigeons.

The mixed coniferous forests constitute a second major habitat type represented within the region. While the mixed coniferous forests overlap significantly with the Douglas fir forests, a major difference does exist between the two in terms of the diversity of the shrub layer and absence of dense stands of Douglas fir which characterizes the former. The mixing of plant species from the two different habitat types and the increased carrying capacity of the mixed coniferous forests which results from its more diverse understory makes the mixed coniferous forest one of the most productive areas in terms of biological diversity. The drawback for human habitation within these areas, however, rests with the extremes of topography which typically prevail within the mixed coniferous forest as well as the tendency for individual species present to be represented by relatively low population densities.

Rocky ridges and rock outcrops occur in abundance within the Klamath Mountains region. While this habitat type itself experiences extreme climatic conditions and supports poor soil conditions with little vegetation, these areas are often found in close association with other habitat types and frequently constitute borders or boundaries separating one habitat type from another. Since ridges in many cases also facilitated human movement through the area and were

also used by small and large game animals in their movements from one habitat type to another, they are potentially very significant areas so far as human use is concerned. While these areas do not represent areas selected for permanent occupation, they were visited and utilized by prehistoric and aboriginal populations and thus contain evidence of past hunting and other activities.

Many areas within the region consist of fields of Sadler oak, manzanita, red huckleberry, and ceanothus. These areas constitute another habitat type, often interspersed with coniferous forest habitats. The plant species diversity which is characteristic of this habitat type was important to many of the animal species such as deer and bear which were utilized by prehistoric populations. In addition, a variety of small mammalian and avian species depend on such habitats for food and protective cover.

Meadows represent another important habitat type within the region. Many meadow habitats occur adjacent to mixed coniferous habitats. While these two habitat types are very different from one another in terms of their productivity, the two complement one another in important ways, with the meadows providing productive feeding areas while the dense forest vegetation was used for predatory and thermal protection.

Most of the habitats outlined above are characterized by high species diversity, but only relatively low population densities per species. The major exception to this feature occurs within riparian habitats which are widespread throughout the Klamath Mountains region. Riparian habitats include lakes, ponds, streams and springs, and these areas provide a wide range of very productive resources for a large number of insects, reptiles, amphibians, fish, and, significantly, humans.

Today as in the past, riparian zones are considered to be one of the most productive wildlife habitat types within the Klamath Mountains region as a whole. The most significant animal species occurring within this habitat type and which was used for food by aboriginal occupants within this part of California were the anadromous fish which made annual spawning runs up the Klamath and Trinity Rivers and their tributaries. Baumhoff's (1963) conclusions concerning the

significance of salmon as the main determinant of population among the Karok has been only slightly modified by subsequent studies within the area. Chartkoff and Chartkoff (1975) have recently undertaken an intensive study of Late Period settlement patterns within Karok territory, and have demonstrated that the volume and distribution of fish clearly regulated not only population size, but also the distribution and density of aboriginal population as well.

In the Chartkoff model, physiographic factors occurring both within as well as outside of the riparian habitat areas functioned in a negative way to constrain settlement within Karok territory. However, salmon availability within major streams was positively correlated with all aspects of major Karok settlements. To the degree that much of the territory within the Klamath Mountains region is characterized by physiographic features and resource availability similar to the patterns which occur within Karok territory, the Chartkoff Karok study offers propositions that can be tested with other ethnographic and archaeological cases of riverine settlement within the region. In other words, site predictive models based on the Karok data may provide useful starting points for surveys undertaken within BLM administered and other lands occurring within the present Inventory Area. From such comparative studies should emerge a series of general propositions accounting for settlement patterns among people occupying the Klamath Mountains region of the Inventory Area who were largely dependent upon anadromous fish.

The peoples and cultures of Northwestern California, including those groups inhabiting major portions of the Klamath Mountains region of the Inventory Area, have been described as the "least Californian" of California's aboriginal peoples. The groups inhabiting this largely forested area have often been treated as an outlying or marginal expression of the more spectacular maritime cultures located to the north between Puget Sound and southern Alaska, with the Northwest California groups differing from Northwest Coast groups primarily in their greater emphasis on riverine as opposed to maritime adaptation. As noted above, the adaptation within much of the Klamath Mountains region was based upon salmon fishing. This adaptation, in turn, was made possible by the abundance of anadromous fish available within the major streams, combined with the fact that the dominant

vegetation type throughout the region resulted in relatively low acorn and game production while topography functioned to constrain settlement placement.

The effect of local Klamath Mountains region ecology on aboriginal technology is clear, with a high development of items such as fishing spears, fish dams, boats, etc. The effect of local ecology or environment on population size, density and distribution has already been briefly discussed above. However, the effect of local ecology on the social systems of local cultures has been very difficult to determine. As Baumhoff (1978:19) notes,

> Society (within Northwestern California) may be characterized as individualistic, prudish, and given to litigation. The extreme crowding of the rivers may have had something to do with the last feature; for example, one was entitled to use any boat beached on the river bank in order to cross a stream but one was liable for the value of the boat if anything happened to it while in use. Incidents such as this must have had greater frequency where population was thicker.

Beyond this general statement, however, it is difficult to see meaningful relationships between environment and society or demography and society (ibid.).

One final point needs to be made about the Scott Valley area and its relationship to possible early occupation within California. The Scott Valley area represents the only extensive region of valley fill located within the Klamath Mountains province within California. In fact, it has been estimated that the valley contains alluvial deposits in excess of 400 feet thick. As more research is undertaken within this area, the opportunity may arise for testing some recent theories regarding pre-12,000 year old aboriginal occupation within California. Research undertaken by Treganza (1952) and more recently by Sundahl (1976) (both of which are discussed more fully in the Chapter on prehistory) suggests that very early occupants of California may have produced a variety of crude flakes and core implements from locally available stream cobbles. The evidence which is available for this period is summarized by Brott and Dotta (1978) who suggest that the cobble-artifact stratum associated with this occupation dates to late

Pleistocene times, perhaps 16-20,000 years ago. If so, then Scott Valley as well as other valleys where a thinner veneer of Pleistocene sediments cover cobble rich alluvial layers may someday yield significant evidence relevant to this presumed "archaeolithic" period (Brott and Dotta 1978).

The Cascade Range and Modoc Plateau. Adjoining the Klamath Mountains on the east and lying north of the Sierra Nevada is the Cascade Range. Between the Cascade Range on the west and the Warner Mountains to the east is a high, semiarid tableland known as the Modoc Plateau. As with Northwestern California, however, neither of these Northeastern California areas is typical of California in general. Indeed, as A. L. Kroeber (1925:334) remarked at the conclusion of his Handbook's chapter on the resident Modoc Indians,

> It is evident that the inclusion of the Modoc in this volume is of somewhat dubious ethnological justification. If their civilization is essentially Californian, the same is true of the Klamath (Indians'), and aboriginal California would have to be extended to take in an area of which at least three-fourths lies in what is now Oregon.

Similarly, the Cascade Range is the southern extension of a province which passes through Oregon and Washington virtually to the Canadian border and which is characterized by a chain of large and recently active volcanic cones (Hinds 1952). The Modoc Plateau, on the other hand, is part of the larger Columbia Plateau, itself a massive volcanic field that covers much of eastern Washington and Oregon and southern Idaho (ibid.).

In short, comparisons of Northeastern California with other California regions are difficult to make. First, no part of the region was at or near sea level as is the case for all other areas of California, and second, almost all the land located within this large tract was timberland, either pine and Douglas fir or juniper. The exception is a rather extensive patch of desert shrub or Great Basin sagebrush area occuring within portions of both the Modoc Plateau and the Cascade Range.

At the southern end of the Inventory Area the rocks of the Cascade Range and the Modoc Plateau overlap the metamorphic and plutonic rocks of the Sierra Nevada mountains; near Redding, similar rocks emerge from beneath the Cascade volcanics at the edge of the Klamath Mountains region. The Inventory Area itself includes nearly all of that portion of the Cascade Range occurring within

California, but only a part of the western portion of the Modoc Plateau. The division between the Modoc Plateau and the Great Basin province to the east (but which lies outside of the Inventory Area) is vague. Both regions consist of fault-block mountain ranges separated by flat-floored basins, and similar rocks are present on both sides of the boundary.

The Cascade. The northern part of the Cascade Range in California is very similar to the geologic structure which characterizes the Cascade Range thoughout most of Oregon. This is, the Range has been divided into the Western Cascade Range and the High Cascade Range.

The rocks of the Western Cascade Range include lava flows and beds of pyroclastic debris, occasionally interbedded with nonmarine and shallow marine sediments gradually accumulated to a thickness exceeding 10,000 feet in some places, which slowly sank to form a shallow trough (Macdonald 1966:66). These Western Cascade rocks are underlain by Eocene sedimentary rocks and overlain by Pliocene to Recent volcanic rocks of the High Cascade Range. At some point in time near the end of the Miocene, the rocks of the Western Cascade series were gently folded on east-northeast-trending axes. This was followed by erosion which apparently reduced much of the region to an area of rolling hills. This, in turn, was followed by a series of northwest-to north-trending faults. Next came a succession of eruptions of basalt, basaltic andesite and andesite that built a series of small shield and lava cones, thus overlapping the Western Cascade Range rocks by flows from the emerging High Cascade Range. Eventually, a series of large composite volcanoes formed along the High Cascade Ridge which represent the consipicuous peaks of the present Cascade Range.

The time of the beginning of the High Cascade volcanism has not been dated precisely. In the region north of Mount Shasta the oldest of the High Cascade rocks are younger than the Miocene rocks of the Western Cascade and older than the other rocks that are in turn overlain by Pleistocene glacial moraines. At the south end of the Cascade Range, northwest of Lassen Peak, andesite lava flows of the High Cascade Range rest on the Tuscan Formation which is of latest Pliocene age (Axelrod 1957;Macdonald 1963, 1966). The general consensus of opinion is that most of the High Cascade building took place in late Pliocene and early to middle Pleistocene times (Williams 1949).

As volcanism continued through Pliocene/Pleistocene times, the activity became more concentrated within distinct centers, resulting in more individualized cones, some of which are shield volcanoes and some composite cones. An example of the latter included the Brokeoff Volcano (Mount Tehama), the largest of the volcanic mountains, which subsequently collapsed to form the caldera in which Lassen Peak was later built. In the Lassen area, volcanism culminated in the eruption of several dacite domes, some of them only a few hundred years old, and at Medicine Lake, flows and domes of rhyolite obsidian were erupted. At the same time, basaltic volcanism continued with the eruption of similar flows as exemplified by the Hat Creek and Cinder Cone flows in the eastern Lassen region (Macdonald 1966).

The Modoc Plateau. That portion of the Columbia Plateau which lies within California has received the name Modoc Plateau because it lies for the most part within the county of the same name. Average elevation of the Plateau is 4,500 feet, with many peaks and ridges projecting to more than 6,000 feet above sea level. The region is characterized by a thick accumulation of lava flows and tuff beds with many small volcanic cones, most of which appear to have been built during Pleistocene times. However, the oldest known rocks are of Miocene or possibly Oligocene age while the youngest are Recent.

Major faulting occurred during late Miocene or early Pliocene times, thereby producing a series of northwest-to north-trending block-faulted ranges. The intervening basins filled with broad-spreading basalt flows or with small shield volcanoes, steeper sided lava or composite cones, and cinder cones. Additionally, the basins accumulated sedimentary deposits resulting from disruption of the drainage by faulting or volcanism, producing occasional marshes, lakes and sluggishly flowing streams. The sedimentary deposits include fanglomerates, stream-laid alluvium and terrace deposits, and tuffaceous sandy, silty and diatomaceous lake beds, and, in the high mountains, glacial moraines and outwash. Lake deposits occupy large areas in the Fall River valley, Big Valley, the valley of the South Fork of the Pit River, the Madeline Plains, around the north end of Lake Almanor, and smaller areas in other basins.

In general, precipitation is relatively light over the entire Plateau. Most of the streams and lakes which do exist within the area are restricted to the north and south portions of the Plateau, with the central section being quite

destitute of water. Moreover, the high permeability of the surface rocks, typical of basaltic terrains results in a nearly complete lack of surface flows and a very poorly defined drainage pattern. However, the underlying rocks are commonly much less permeable, and the rocks of the Cascade Range to the west represent an effective barrier to the westward movement of much of the Modoc Plateau ground water. The consequence is a water table which ranges in altitude from about 4,000 to 4,100 feet throughout much of the Plateau. Above about 4,000 feet, for example, the Pit River and its tributaries and many of the other streams apparently lose water to the ground, but below this altitude these streams gain water rapidly (Macdonald 1966).

Major vegetation communities within this extensive tract in northeastern California include Great Basin Sagebrush, Coniferous Woodland, and Coniferous Forest (Weislander and Jensen 1946). Much of the Coniferous Forest includes dense to open stands of ponderosa pine, although the forest, which includes Douglas fir, white fir, and a variety of other species, is exceedingly variable in composition of its dominant species.

The Coniferous Woodland community includes what is referred to as the piñon-juniper woodland as well as that community variously termed the "Sierra juniper" and "northern juniper woodland" (Baker et al. 1949). In this part of California, its elevation range is from about 4,000 to 7,000 feet, and is typically encountered between the sagebrush or desert shrub at lower elevations and the ponderosa pine forest at higher elevations. Characteristic trees include California juniper (Juniperus californica), Utah juniper (J. osteosperma), and singleleaf piñon (Pinus monophylla), in very variable mixture. From about Susanville northward, however, western juniper (Juniperus occidentalis) is the predominant or sole aborescent member of this woodland community. Additionally, a variety of shrubs are intimately associated with this community, while herbaceous vegetation is represented chiefly by perennial grasses. This community provided an excellent grazing resource for pronghorn antelope (Antelocapra americana).

The third major vegetation community represented within the area is Great basin sagebrush, typically a plant community of the Basin-Ranges province, but with important outliers in the Modoc Plateau as far west as Siskiyou County. This community lies primarily between about 4,000 and 7,500 feet above sea level, more xeric in character than chaparral community, and dominated by a variety of sagebrushes. A variety of shrubs and herbs are associated with the community, and importantly, the understory of the association consists chiefly of perennial grasses.

The large tracts of open areas which occur within the Cascade Range and Modoc Plateau regions were important to aboriginal occupants of the region not only for the grasses (hence antelope) which they supported, but also for the epos root which grew here as well. Epos is heavy in carbohydrates, but at certain times of the year contains up to 15 percent protein (Yanovsky and Kingsbury 1938:661, cited in Baumhoff 1978:19). As Baumhoff notes, this resource was storable and was obtainable in large quantities, and thus represented a true aboriginal food staple, perhaps comparable to acorns elsewhere within California.

Moreover, as Baumhoff also notes (1978;19-20),

> This reliance on root crops as a staple by the (aboriginal) peoples of Northeast California indicates their relationship with Plateau people to the north. Among the Klamath in particular the wokas (Nuphas polysepalum), a water lily harvested for its bulb, occupies a position analogous to the epos among the Achumawi and Atsugewi. Throughout the entire area the camas (Camassia quamash) is used for its root and among some groups was a staple food.

It remains unclear whether it was environment or culture which most influenced use of these root crops among aboriginal occupants within the region. However, it is clear that there were no very good tree crops available throughout much of the region, including acorns or pine nuts, so that the environment may tentatively be considered a governing, if not a determining factor in the use of these plants.

The animal food resource supported within this region was also very important to the aboriginal occupants. Both deer and antelope were abundant. In addition, the Fall River valley represents a confluence of two of the major north-south flyways of migratory waterfowl.

Although aboriginal population estimates for this area of California are not available, Baumhoff (ibid.) suggests that a population level similar to that which existed within the Northwest California coastal region may be a reasonable assumption based on the resource level available. In any case, without adequate population density and distribution estimates, it is difficult to assess possible environmental effects on society as mediated by population size and density. Existing archaeological and ethnographic data indicate that fairly dense aboriginal populations were concentrated along the Pit River, with even larger concentrations located along the Fall River valley where waterfowl

gathered. Kroeber commented upon another interesting parallel between Northwestern California groups and those occupying Northeast California (Kroeber 1925:305):

> Like the Northwestern Californians..., the Achomawi (of Northeastern California) were stream people. Their villages were all on Pit River itself or on the lower course of its affluents. The back country was visited and owned, but not settled...(since)... it is high and comparatively barren as soon as the streams are left behind, while a large part of it...is pure waste lava.

But despite the concentration of population along the major water courses within the area, the ethnographic information does not provide evidence of established lineages or other formally organized corporate kinship groups more extensive than nuclear family units. This, in turn, is again used as indirect evidence that population densities similar to or lower than those recorded for Northwestern California probably prevailed within the populated portions of Northeastern California as well.

The Northern Sacramento Valley. The central portion of California, between the Coast Ranges on the west and the Sierra Nevada on the east, is occupied by an extensive alluvial plain about 450 miles in length and 50 miles in width. This area is commonly referred to as the Central Valley, or the Great Valley, with its northern one-third referred to by the same name as the primary river which flows through it -- the Sacramento Valley. The only prominent topographic eminence within the Sacramento Valley is the Marysville, or Sutter, Buttes, a Pliocene volcanic plug located west of Marysville and immediately east of the Sacramento River. The Buttes measure approximately 10 miles in diameter and rise abruptly from the valley floor to an elevation of approximately 2,100 feet above sea level (Jensen 1970). However, only that portion of the Sacramento Valley lying north of the Glenn-Tehama County line is included within the present BLM Inventory Area. The City of Redding, which is located near the center of the Inventory Area, marks the approximate northern terminus of the Sacramento Valley.

Structurally, the Sacramento Valley is a large, elongate,

northwest trending, asymmetric trough. The trough is characterized by a fairly stable eastern shelf which is supported by the buried west-dipping Sierra Nevada slope, and a shorter western flank, which is formed by the steep upturned edges of the basin's sediments. The Sacramento Valley is drained by the Sacramento River and its tributaries which join the San Joaquin River east of San Francisco Bay.

While much of the Great Central Valley, including the Sacramento Valley is flat and monotonous, four distinct geomorphic units have been identified (after Poland and Evenson 1966):

1) Dissected uplands: These areas fringe the valley along its mountain borders and are underlain primarily by unconsolidated continental deposits of Pliocene and Pleistocene age which have been structurally deformed. The resultant terrain ranges from dissected hills with relief of several hundred feet to gently rolling lands where relief is only a few feet. Within the Inventory Area, extensive tracts of land located west of Red Bluff fall into this category.

2) Low alluvial plains and fans: These areas frequently border the dissected uplands along their valley-side margins, and are generally flat to undulant and are underlain by alluvial deposits of Pleistocene and Recent age. Within the Inventory Area, this geomorphic unit is restricted for the most part to some small areas south and west as well as south and east of Red Bluff and the Sacramento River.

3) River flood plains and channels: River flood plains lie along the Sacramento River, the lower course of Cottonwood Creek west and south of Redding, with marginal development along streams on the eastern side of the Sacramento Valley. Within this northern portion of the Sacramento Valley most of the major streams, including the Sacramento River, are incised below the general land surface and thus are characterized by well-defined channels and flood plains.

4) Overflow lands and lake bottoms: Within the southern portion of the Great Valley overflow lands and lake bottoms are clearly evident within Buena Vista and Tulare Lakes. However, within the northern Sacramento Valley, overflow lands are restricted primarily to areas adjacent to the natural levees of some of the major streams, including small portions

of the lower course of Cottonwood and Dibble Creeks where these merge with the Sacramento River, and portions of the Sacramento River south of Redding. These areas are almost level and are underlain by lake and swamp deposits of Recent age.

Each of these geomorphic units provided somewhat unique habitats for an immense array of plant and animal life, and thus conditioned a number of aspects of human habitation as well. In its pristine condition, the Great Valley was a region of extensive natural grasslands and savannas. In addition, the northern Sacramento Valley included some timberland in addition to substantial quantities of variable woodland and chaparral-covered foothills along its eastern and western margins. The woodlands and chaparral were very important to the aboriginal occupants of this area in production of vegetal food and as deer habitat; the grasslands of the valley floor and margins were important for antelope; and along the Sacramento River and its main tributaries was a large gallery forest (Weislander and Jensen 1946) abundant in valley oaks which were important acorn producers. In addition, the rivers and adjacent habitats within the northern Sacramento Valley supported numerous avian species as well as large quantities of salmon, with this latter resource apparently exceeding the available salmon even within the Klamath River (Baumhoff 1963:221). In other words, the Sacramento Valley supplied the full range of staple foods which were available to aboriginal Californians generally.

It would be erroneous, however, to think of each of these various geomorphic units/habitat areas as supporting particular groups of people, each specializing in the acquisition and processing of the various economic resources available within individual areas. On the contrary, such specialization might well have been disastrous, since the resources available within individual areas were probably insufficient in terms of their total caloric yield and/or seasonal availability to sustain either the levels of population estimated and/or the permanency of occupation recorded ethnographically for this part of California. While it is clear, therefore, that the geomorphic units within the Sacramento Valley and surrounding regions supported a variety of distinct habitat types, it is equally clear that the prehistoric and ethnographic occupants utilized the resources from several contiguous habitats by means of well established patterns of seasonal transhumance. To

illustrate the relationship between habitats and aboriginal economy within this part of the Inventory Area, we may examine in detail the exploitative territory of one of the sub-groups of the Wintu Indians.

At the time of Euroamerican contact, most of the western side of the Sacramento Valley north of about Suisun Bay was inhabited by Wintun-speaking people. This large group of Penutian stock was divided into a southern Patwin group, a central Wintun or Nomlaki group, and a northern Wintu stock. The northernmost group was further divided into eight sub-areas, with the southernmost of these sub-groups being the Dau-nom, or Bald Hills Wintu (Du Bois 1935:Map 1). This group appears to have been primarily restricted to the Cottonwood Creek Drainage Basin area, although with permanent villages located as far south as Jelly's Ferry which is located approximately eight miles north of the city of Red Bluff.

The available ethnographic information documents a pattern of land use, settlement, and subsistence orientation which was quite complex. Not only were there permanent village sites established along the lower courses of Cottonwood Creek and the Sacramento River, but the Wintu also established and made seasonal use of a variety of less-permanent villages/ camps in regions to the west of the Sacramento River. The nature of Wintu settlement and land use within this portion of the northern Sacramento Valley was certainly conditioned by the nature and distribution of local resources, which were in turn conditioned by the existence of distinct but contiguous geomorphic units within this area.

The Cottonwood Creek Drainage Basin (Dau-nom territory) is located at the upper end of the Sacramento Valley. The valley plain is quite narrow at this point, with low hills projecting almost to the Sacramento River. Cottonwood Creek lies west of and drains into the Sacramento River approximately midway between the cities of Redding and Red Bluff. The Drainage Basin stretches from the confluence of Cottonwood Creek and the Sacramento River in the east to the crest of the North Coast Range mountains in the west, comprising approximately 930 square miles of land which is characterized by a wide range of topography, vegetation, and other resources.

The principal streams within the Drainage Basin originate in the rugged mountain areas of the western one-third of the

Basin and flow generally eastward. This western one-third of the Basin is characterized by steep terrain, with elevations ranging from about 2,000 to 7,000 feet above mean sea level. Much of the area lies within the boundaries of the Trinity National Forest, and includes a portion of the Yolla Bolly/ Middle Eel Wilderness Area and a portion of BLM Planning Unit Area 03-09, Yolla Bolly. Here, the vegetation is primarily coniferous forest. This plant community is in turn comprised of several more or less distinct forest communities with numerous transitional and seral communities. Douglas-fir appears to be the dominant species of this forest within this portion of the Basin, and in certain areas is characterized by almost pure stands of this species. Most of the Douglas-fir concentration occurs below about 4,500 feet, and reaches its best development on north and east slopes, preferring watercourses and shady, well-drained slopes. Within various parts of the western Basin there is an admixture of incense cedar, California laurel (Umbellularia californica), and tanbark oak (Lithocarpus densiflora). A variety of shrubs are characteristic of open ridges and dry forested slopes, while within most of the ravines and along the watercourses above about 2,000 feet are found Rubus parviflorus, Rubus spectabilis, and Cornus glabrata. In some regions of the western Basin the forest cover is broken by areas of woodland prairie; in others, the forest crown achieves nearly 100% closure. Clearly, the topography, hydrography, and vegetation within this western portion of the Basin differ markedly from those features characteristic of the middle and eastern portions of the Basin. This may provide a partial explanation for the cultural divergence between the Hayfork and Bald Hills Wintu whose territorial boundaries correspond generally with the boundaries separating the western from the middle/eastern portions of the Basin.

The middle third of the Cottonwood Creek Drainage Basin consists primarily of rolling foothill land with elevations ranging from about 600 to 2,000 feet above mean sea level. This region is primarily grassland, with some significant stands of oak forest and scattered manzanita and other brush. The dominant plant community throughout most of this area is the Foothill Woodland variety (as opposed to the Valley Woodland) of California's Oak Woodland (e.g., Burcham 1957). This particular plant community is quite discontinuous and widely distributed throughout California, occupying valley borders and low slopes of the Coast Ranges, Klamath Mountains and

Sierra Nevada, extending southward into the Peninsular Ranges of southern California, and usually occurring at elevations below about 2,500 feet. The community is dominated largely by oaks, principally by interior live oak (Quercus wislizenii) and blue oak (Q. douglasii) within this area. Digger Pine (Pinus sabiniana), California laurel, and California Buckeye (Aesculus californica) are associated with these oaks, with digger pine predominant in the drier regions, California laurel occasionally found along the watercourses and areas of locally greater moisture, and Buckeye found indiscriminately with respect to dryness or wetness. Although dominated by hardwoods, the ground cover of this typically open woodland community (crown cover ranges from approximately 5-20%) is essentially herbaceous, characterized originally by perennial bunchgrasses, thus resembling the pristine prairie-like conditions which existed throughout much of the northern California valley region (Clements and Shelford 1939). Typical of the bunchgrass dominants were foothill and large needlegrasses (Stipa lepida and cornata) and blue wild-rye as well as several additional genera of grasses and numerous genera of forbs. These grasses provided an excellent foraging resource for native grazers and browsers in the region, and, in fact, virtually all of the middle third of the Cottonwood Drainage Basin remains privately owned and is managed for range use today.

A second major plant community within the middle third of the Cottonwood Basin is the Chaparral Community. Characteristic of xeric sites on slopes and ridges within this area, this community mixes freely with the Foothill Woodland Community. While the Chaparral Community most commonly occurs at elevations ranging from about 1,000 to 4,000 feet above mean sea level, there are major exceptions to this average figure, including large tracts within the middle third of the Basin. The Chaparral Community is characterized by a variety of shrubs, most of which are evergreen, extensively branched, and frequently dwarfed with extensive root systems thus enabling them to endure the long, hot and dry summers. Many of these shrubs sprout when cut or burned, an important feature so far as the prehistoric occupants of the region were concerned. Burning, which may have been practiced in prehistoric times by the Bald Hills Wintu, greatly increases the deer habitat as well as increases the carrying capacity per unit area. Deer forage best on non-climax chaparral areas, and do not achieve as high a population density in mature chapparal

as they do in immature stands. As the chaparral is burned back, not only is competing vegetation stunted, but the chaparral succession starts over again, providing excellent browse for deer.

Lastly, the eastern third of the Cottonwood Drainage Basin is located on the valley floor and is currently developed primarily for agricultural and urban use. Elevations here range down to about 400 feet above mean sea level. This area falls within the Valley Woodland plant community which attains its principal development further south in the Central Valley of California. From the beginning of the Valley Woodland eastward for approximately 15 miles to the Sacramento River, the flood plains of the North and South Forks of Cottonwood Creek become wider until the two branches finally merge just west of the town of Cottonwood. From this point to the Sacramento River the flood plain is quite wide, the soils rich, and the dominant plant community becomes the Valley Woodland. The characteristic tree of this community is the California white oak, or Valley Oak (Quercus lobata), which is extensively distributed throughout California. Throughout its distribution, this species forms widespread savannas on the deep alluvial soils of lower flats and hills, and not infrequently occurs in nearly closed stands over appreciable areas. On drier sites and gravelly soils, Valley Oaks mingle with interior live oak and blue oak, while along the lower courses of Cottonwood Creek they occur with California sycamore (Platanus racemosa), Oregon Ash (Fraxinus latifolia), walnut (Juglans hindsii and californica), cottonwoods (Populus spp.) and willows (Salix spp.). Prior to the introduction of agriculture within this area, the extensive Valley Woodland Community was similar to its Foothill Woodland counterpart in having an herbaceous ground cover resembling that characteristic of the California prairie (Burcham 1957).

All in all, vegetal resources, including a variety of seeds, acorns, and other nuts, greens and tubers were abundantly available for use by the prehistoric occupants of the region. When we consider the anadromous fishery runs, the resident populations of trout and bass, and the large numbers of grazing and browsing ungulates and smaller mammalian, avian, and reptilian species which inhabited the area, it becomes clear that the basis existed for year-round subsistence within this area -- that is, so long as the area is defined as stretching from the Sacramento River in the east to the upper

reaches of the various forks of Cottonwood Creek in the west.

We can be fairly sure that most of the faunal and floral resources occurring within this area were utilized by the prehistoric inhabitants. This is fairly well documented in Du Bois' (1935) and Kroeber's (1925) ethnographic accounts in which these authors itemize numerous plants, mammals, fish, birds, reptiles, and insects which the Wintu customarily sought for dietary, medicinal, technical, and magico-religious purposes.

Apart from the biotic environment outlined above, the Cottonwood Drainage Basin also offered a favorable climate, sufficient water and level terrain for villages, and an elevation below the snow line for year-round habitation. While bedrock outcrops are somewhat limited within the immediate project area, other rocks and minerals which were locally available and used by the Indians include granite, quartzite, basalt, andesite and schist. Some small amount of obsidian occurs as float material in some of the streams, particularly to the north of Cottonwood Creek, although apparently most of the obsidian from which projectile points and other tools were manufactured was obtained by individual or joint expeditions to Glass Mountain, located to the northeast (Du Bois 1935:126), or else was acquired through trade from those other Wintu who made such journeys.

The Bald Hills Wintu, like many other hunter/gatherer groups around the world, were able to exploit a great variety of resources within a given territory through the strategy of seasonal transhumance (cf., Davis 1963; Jensen and Kautz 1974). They moved from one ecosystem to another, scheduling their exploitative activities in order to arrive at a particular resource during its peak of production and ease of obtainment. Although Dau-nom territory is located largely within a single geomorphic province (e.g., the Sacramento Valley Province), the discussion presented above was designed to illustrate the ecological diversity which exists within this area.

One of the primary questions for anthropology, of course, is how much influence does a particular environment or set of "ecological conditions" exert on other aspects of the total technological and sociocultural system of particular groups of people? While particular patterns of adaptation are seldom

self-evident, and attempts to demonstrate cause-and-effect in this realm virtually futile, the general connection between environment and culture can be fairly clearly stated. Continuing with our Wintu example, this group, as noted above, occupied an ecologically diverse geomorphic province and was dependent upon hunting, fishing and gathering for its subsistence. However, the locations and availability of these resources could not be so modified by Wintu technology that they could be suited randomly to behavior. Rather, it was necessary for the Wintu to suit their behavior to the nature of their own technology and the character of the resources being exploited. To put it another way, the Wintu had to arrange their patterns of movement, as well as other behavioral patterns, in such a way that they had the necessary resources accessible to them at all times. And it is in this way that the "environment" of the Wintu, and of all hunters and gatherers for that matter, exerted its most pervasive and direct influence upon their material and social culture.

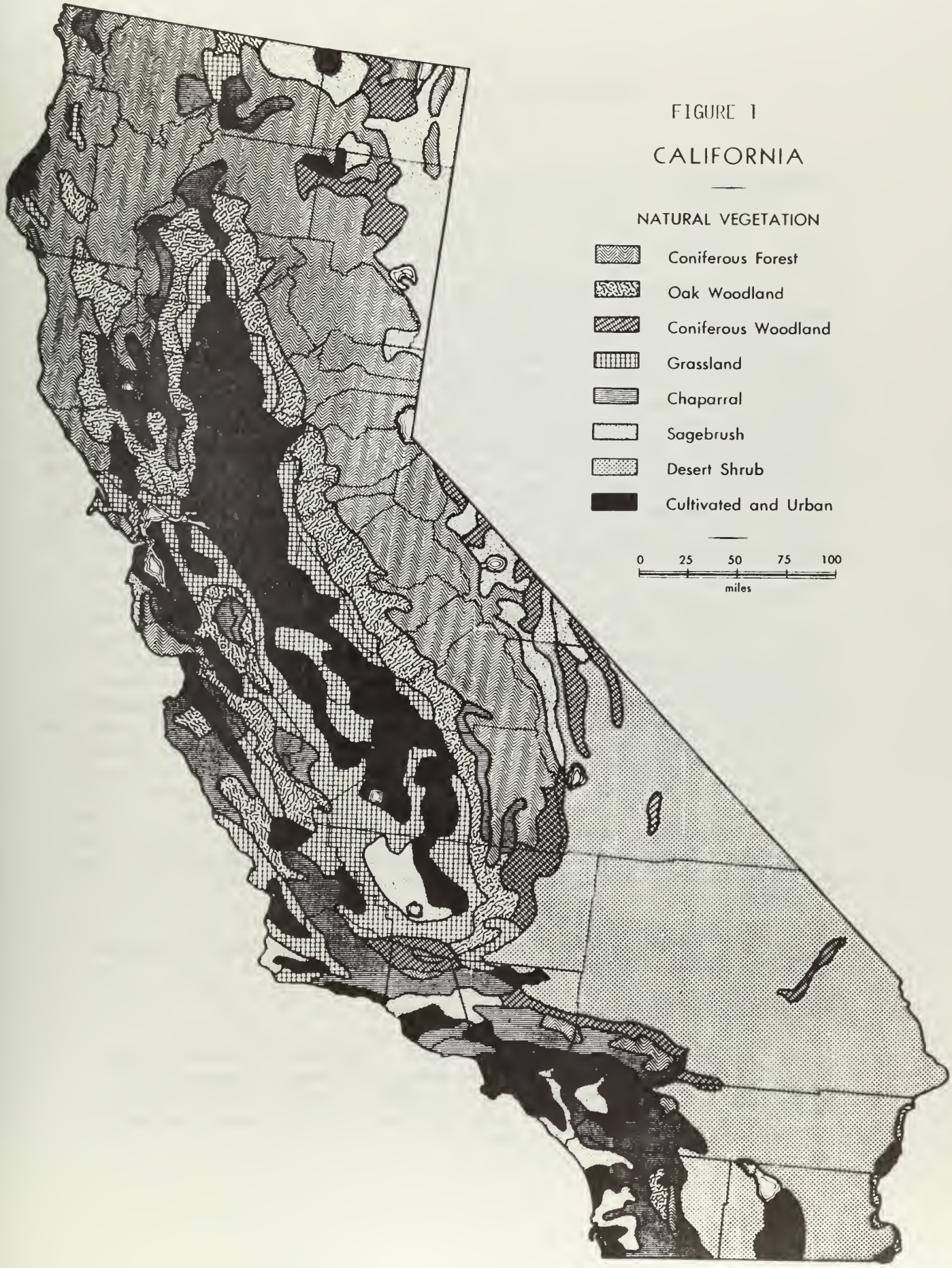


FIGURE 1
CALIFORNIA
NATURAL VEGETATION
Coniferous Forest
Oak Woodland
Coniferous Woodland
Grassland
Chaparral
Sagebrush
Desert Shrub
Cultivated and Urban
0 25 50 75 100
miles
Adapted from Jensen, 1947

III

ANTHROPOLOGICAL SYNTHESIS

Introduction

This Chapter includes four major sub-categories of information: (1) Introduction, (2) Ethnography/Ethnohistory, (3) Prehistory, and (4) History. The sub-section on ethnography/ethnohistory examines the major culture groups located within the Inventory Area with primary emphasis on territory, population, language and cultural affiliation, technology, subsistence and economic orientation, socio-political organization, religion and mythology, and group history. The subsection on pre-history outlines our current understanding of local and region-wide prehistoric sequences, with particular attention given to established chronology and temporal components. Finally, the sub-section on history examines the major historic themes for the Inventory Area.

The data sources for this chapter are drawn from a large number of books, documents and other research sources. It should be emphasized, however, that the ethnographic information available for particular cultures, and the level of archaeological research and reportage for particular areas, is extremely variable. To put it another way, we have good information about some areas but very incomplete information about others. Additionally, reliable data on the current status of extant native populations have been particularly difficult to acquire. Local American Indian tribal councils have been able to provide some information for some areas and some Indian groups, but for other areas and other Indian groups virtually no information could be acquired.

With these caveats in mind, we may proceed with the review of the information that is available.

Ethnography/Ethnohistory

Introduction. The aboriginal groups included within the Inventory Area are the Shastans, Modoc, Chimariko, Yana and Wintun (see Map 1). Each of these is further divided into a number of sub-groups on the basis of dialect and geographic distribution.

Data on the Indians of northern California have been reported in major works by Kroeber, DuBois, Merriam, Heizer, Powell, Waterman, Cook and others. The most recent compilation of data is Volume 8 of the Smithsonian Institution's Handbook of North American Indians. This volume provides updated ethnographic and historic information for California, with one to two scholars detailing information on each of the native California groups within separate chapters. Nevertheless, even this most recent work has not in all cases been able to expand significantly on the information which Kroeber and others have already provided, in large measure because little essentially new information has been acquired for many of the aboriginal groups in question. Indeed, some of the peoples who occupied portions of the Inventory Area, such as the Chimariko, were already extinct by the time Kroeber's and others' data were collected, while for other groups the rapid pace of the Twentieth Century perpetrated the final coup-de-grace on what remained of their traditional way of life, thus obliterating any last bits of information which earlier workers might have left uncollected.

For many groups we must be content with studies which examined only one of several once-existent sub-groups. This is particularly evident in the case of the Yana, about whom virtually all of what we know comes from Ishi and thus largely reflects only the Yahi way of life.

Shastans

Introduction. Although a large number of diverse cultures occupied California during historic and prehistoric times, most of California was dominated by two major linguistic families: the California Penutian and California Hokan. The Penutians occupied the larger share of territory, while the Hokans held what might be interpreted as somewhat more marginal positions, being split among people like the Pomo of the North Coast Ranges, and the Shasta of in the far north region of the State. It is this latter group, which occupied a rather extensive portion of the rugged mountainous portions of northern California, which laid claim to a large portion of the territory within the Inventory Area.

It is unfortunately the case that very little ethnographic data are available for the aboriginal groups comprising the Shastan group of Indians. Nevertheless, the material collected by Dixon (1907), Kroeber (1925) and others is sufficient to piece together at least the broad outlines of Shasta culture and history.

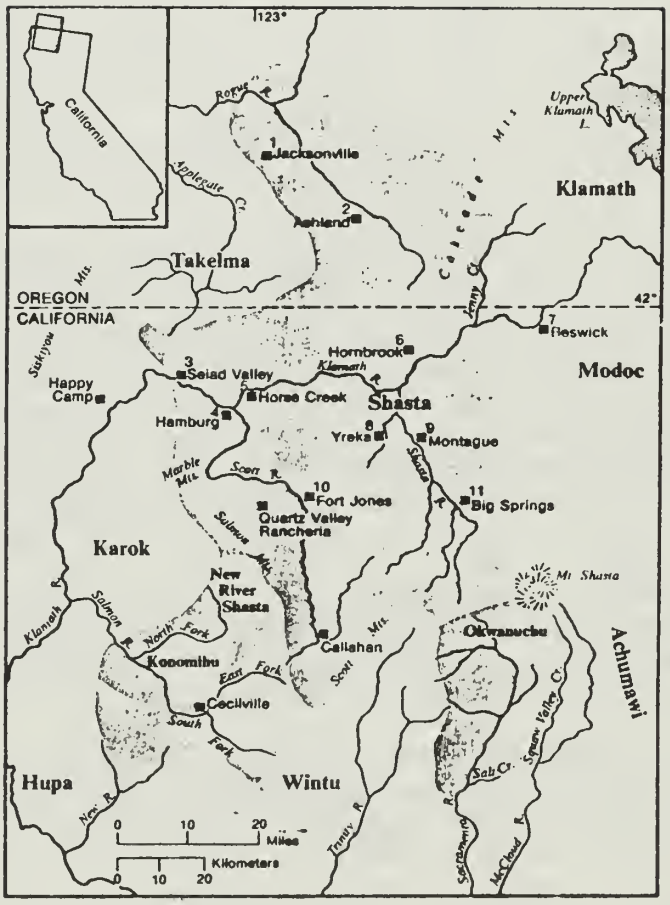
The habitat of the Shastan groups can be divided into two almost equal halves, with further subdivisions based on dialect variations. One is the western Shasta, or "Sastean" of the Klamath drainage, and the other, or eastern half, the "Palaihnihan" of the Pit River drainage (Kroeber 1925:280) (see Map 2). Shastan territory was located in what is now parts of Shasta, Siskiyou, Modoc and Lassen counties, and falls within several BLM planning units: Middle Klamath, 03-02; Scott Valley, 03-03; Shasta, 03-06; and a small portion of Trinity, 03-04.

To provide clarity, the following ethnographic discussion is divided into two parts, one relating to the western Shasta, and one relating to the eastern Shasta. The ethnohistoric component of the Shasta cultures is provided in a single discussion.

Western Shasta (Shasta Proper and Decayed Shastans).

Territory. The western Shasta, or "Sastean," were comprised of four dialect subdivisions: the Rogue River division ("Kahosadi"); the Klamath River division ("Kammatwa"); the Scott Valley division ("Iraitsu"); and the Shasta Valley group ("Ahotireitsu"). These four divisions are known as the Shasta Indians, or Shasta proper. Apparently the Scott Valley and Shasta Valley groups were occasionally lumped and referred to as a single cultural entity, called Kikatski (ibid.). On the other hand, there is also evidence that the Scott Valley and Shasta Valley groups were frequently embroiled in feuding, so perhaps the lumping should be considered an externally imposed Euroamerican classification as opposed to an internally or aboriginally conceived one.

Now, while the overwhelming number of Indians in the western or "Sastean" area represented the Shasta Indians proper, there were at least three other closely related groups which Kroeber, for lack of a better term, has called "decayed Shastan groups" (Kroeber 1925:280). One of these is called the New River Shasta, located at the



Map 2

Tribal territory of the Shastans
(From Heizer 1978:211)

source of Salmon River which is an affluent of the Klamath, and along New River, tributary of the Trinity River, which is also an affluent of the Klamath. A second group is referred to as the Konomihu, located on the middle course of Salmon River. This particular group constitutes the most divergent of these "other" Shastan groups, and was the first to perish completely in the face of the intrusion into the area by Euroamericans after about 1850. The third of these closely related groups is the Okwanuchu. This group occupied the upper Sacramento River from about the vicinity of Salt and Boulder Creeks to the headwaters of the Sacramento; in addition they occupied portions of the McCloud River and Squaw Creek, from the confluence of these two streams upstream to their origins.

While the Okwanuchu is considered a distinct aboriginal group, there is no doubt about the derivation of this group from the Shasta proper. While Kroeber (ibid.) notes that the dialect was "peculiar", many words are practically pure Shasta. Kroeber also noted that "while there may have been a few dozen or two or three hundred Okwanuchu two generations ago...there is not now one." Lastly, most authorities agree that the Okwanuchu are a direct offshoot of the Shasta proper, and do not represent one of the original divergent branches of the general Shasta trunk. For this reason, and in light of the fact that virtually no ethnographic data are available for this Shastan subgroup, we must assume (and hope) that the ethnographic data which are available for the Shasta proper apply at least in part to the Okwanuchu.

Concerning the western Shastans generally, most archaeologists, ethnographers, and linguists agree that the direction of movement of the Shastan group into the area of northern California in prehistoric times was from the south to north. This hypothesis is based on linguistic affinity to other Hokan-speaking groups, on the relation of the other Hokan speaking groups to the Penutian "intruders" occupying the Great Central Valley below, as well as on the constraints on movement imposed by the terrain and drainage system of the region itself. It is equally clear, however, that considerable shifting has occurred among the Shasta within the region which they occupied at the time of Euroamerican contact and for which we have ethnographic and some ethnohistoric information. Evidence for this shifting exists in the dialect and other cultural variations as noted above for the various Shastan groups.

Population. Aboriginal population densities and concentrations within the area are extremely difficult if not impossible to accurately reconstruct. Kroeber (1925: 287), following Dixon's earlier study (1907), notes evidence for the existence of at least 19 "towns" along the Shasta River within Shasta Indian territory, each with average estimated populations of 40 persons. The total number of settlements for all the western Shasta was estimated at 50 "towns" at the time of Euroamerican contact, which, coupled with the figure for number of persons occupying each of these "towns" yields a total population estimate for the Shasta of about 2,000 persons, a figure which is corroborated by Heizer and Whipple (1951:71). Kroeber also notes, however, that there are really no reliable statistics for population, particularly given the dramatic consequences on the local population of Euroamerican intrusion. Moreover, many groups living within the general vicinity of Mount Shasta were apparently also referred to as "Shasta Indians" by Euroamericans, so that total figures for the Shasta group of Indians may be quite misleading. Baumhoff agrees with these difficulties encountered in attempting to reconstruct an accurate picture of Shasta population, and omits this group from consideration in his treatment of Lower Klamath Province aboriginal groups (Baumhoff 1963:177).

Language. All Shastan dialects are Hokan in affiliation, as noted above. The dialect difference among the Shasta proper, which included the Kahosadi, Kammatwa, Iraitsu, and Ahotireitsu, were not particularly distinctive (Kroeber 1925:286). The three decayed Shastan dialects of Okwanuchu, Konomihu, and New River Shasta are regarded as "offshoots" of the Shasta proper, with the New River Shasta being the most closely aligned to the four Shasta sub-groups and the Konomihu being the most divergent (Kroeber 1925:282-3).

The Konomihu called themselves the "Konomihu." The Okwanuchu may have called themselves the "Okwanuchu," but Kroeber notes that they may have been so called by the Shasta proper. Lacking a known native word or name, the New River Shasta were designated thus by ethnographers, even though it is known that the neighboring Hupa Indians referred to them as "Amutahwe" (Kroeber 1925:280-4).

Subsistence and economy. The staple of the diet of the Shasta proper and decayed Shastans was the acorn, which was obtained in part through trade with the Karok and Wintun

Indians. Acorns were prepared in a variety of ways, including roasting or crushing into a mush. Other vegetal resources included Manzanita berries, fruit, blackberries, elderberries, wild grapes, and chokeberries which were eaten fresh, dried, cooked, or pounded into meal or mush. The task of gathering was accomplished by the females.

Salmon and other fish were plentiful in this territory of creeks and rivers, and these resources were taken through the use of fish dams into which were placed willow basket fish traps or nets, which were strung out to capture fish (Kroeber 1925:294). Fishing was performed by males, and was associated with certain rituals. The first salmon of a run had to be caught with a hook and line, and then further salmon could be secured by any of the other methods available. Some taboos were observed, such as the first run of fish being taboo to adolescent girls among the Shasta settled along the Klamath River. Preparation of fish included roasting, boiling, drying, or pounding into a flour.

Meat of the Grizzly bear, elk and deer supplemented the diet. Hunting techniques included tracking, driving into traps, smoking out, and other forms of traps (Silver 1978b:216). Meat was boiled, baked in earth ovens, or dried.

The Shasta engaged in considerable trade with the neighboring Karok, Wintun, and among their own groups. From the Karok the Shasta obtained dentalia, salt, baskets, acorns and canoes, with the Shasta providing obsidian, sugar-pine nuts and deerskins in return. The Shasta traded similarly with the Wintun, from whom they received acorns and dentalia. Dentalia served as a form of currency, as did woodpecker scalps and clamshell disk beads (Kroeber 1925:287,292).

Technology. The material culture of the Shasta included pipes with stone bowls, bow and arrow, deer-hoof rattles and mortars and pestles, although mortars, according to Kroeber, were never used, the Shasta preferring to pound in a basketry hopper set on a slab.

Baskets were usually traded from the Karok, but they also manufactured some of their own, utilizing a twining technique that resembled basketry of the Karok and Yurok (Kroeber 1925:291). Clothing was similar to other northern

California groups, with males wearing a shirt, breechclout, leggings and moccasins fashioned of buckskin. Women wore two-part skirts (front and back) of deerskin. Hair was worn long, and tattooing provided body ornamentation.

A limited variety of house forms was manufactured by the Shasta. One of the most common varieties of winter houses was the Yurok-type board house, constructed over a central excavated area including a pit for the fireplace. Dirt was piled up to reach the eaves on the outside, and the inside of the structure was lined with slabs of cedar bark. The structure was supported by log posts and the roof area spanned with log rafters, usually four in number. The roof and sides were then boarded over, except for one lower section of one wall which was left uncovered and used as an entryway. The shape of these structures ranges from circular to rectangular. These semipermanent shelters were occupied only part of the year. The summer camp was simply a roofless windbreak of brush.

In addition, the Shasta constructed a large "sweat house." The size ranged from 30 to 40 feet in length and was rectangular in shape. The roof was constructed of planks covered with pine needles and earth. A center post, connected with one at each end of the structure by the ridge pole and holding up a roof that sloped only slightly, was similar in design to Yurok and Karok forms. The floor either was of packed earth or, in the case of the lower Klamath region, of split lumber. The function of this "sweat house" among the Shasta remains unclear. Apparently it was used for gambling and a variety of other "men's" activities, but it was not a "sweat house" or "dance house" in the sense of the Maidu or Yurok large houses which served both of these functions.

A large number of material objects were manufactured from perishable wood and bone, and survive within archaeological sites quite unevenly, if at all. These include spoons, bows and arrows, canoes and digging sticks. In addition, dentalium shells were present that were traded from the Karok as well as some clam shell beads. Nets were made of wild hemp.

Socio-political organization. The basic social unit of Shasta culture was the family, bilateral in descent, which was often so extended that members of a village were

all related (Silver 1978b:214). A hereditary chief held a position as mediator in disputes between villages. Usually the "mediation" consisted of determining payments to be made as compensation for injuries and killings, intentional or accidental. "War" was practiced, but usually only on a limited scale involving raiding of hostile villages. The chief served no particular role in raiding, except in determining payments resulting from war damages.

Brides were bought and social status determined by the amount paid. Post-marital residence was neo-local, and the levirate was practiced. In rare cases of maltreatment such as adultery or other mistreatment, divorce could be effected through a refund of the bride price (Kroeber 1925:296-8).

Puberty rites were observed among the Shasta, with girls being secluded at the onset of the first menstrual period. Boys undertook a two- to six-day "vision-seeking" quest into the mountains at puberty.

Religion and mythology. Female shamans served to cure disease, snake bites, and grizzly bear attacks, among other things. The Shasta believed that there were spiritual forces, or "pains", that resided in rocks, mountains, the sun, moon, stars and in many animals. These pains were the causes of disease and trouble. A variety of rituals were performed by the shamans to exorcise these pains from a victim, including ritual dances, singing, smoking and sucking.

Shasta myth was of a simple nature, lacking a cosmogony. Myth resembled that of neighboring groups, consisting of "tales of magic and adventure, with an interlarding of coyote trickster stories...." (Kroeber 1925:304).

The Shasta buried their dead, and the families of the deceased observed certain ritual mourning activities, including cutting of the hair and a number of food, fishing and hunting taboos (Silver 1978b:216).

Eastern Shastans (Achomawi and Atsugewi).

Territory. The eastern Shasta, or "Palaihnihan", included two major subdivisions known as the Achomawi and the Atsugewi. Achomawi territory covered a vast area with

a variety of geographic features. As Olmsted & Stewart note (1978:225):

> In the west Mount Shasta, 14,162 feet, and Lassen Peak, 10,466 feet, served as the northwest and southwest corners of (Achomawi) Indian territory. The eastern boundary separating the Achomawi from the Northern Paiute was marked by the Warner Range with a half-dozen peaks ranging from 7,843 to 9,934 feet above sea level. Twenty peaks over 6,000 feet elevation were scattered over the...area, breaking it into many distinct valley and stream systems. From the high of over 14,000 feet, Achomawi territory descended to sections of Pit River canyon below 2,000 feet elevation.

The Achomawi settled primarily along streams and rivers in their territory, with major settlements located along the Pit River, an affluent of the Sacramento River. Kroeber notes that the Achomawi were strictly limited to settlement along streams in their territory, a feature which was related to the altitude and ruggedness of their territory. For this reason, "the boundaries of Achomawi land are of little significance compared with an understanding of the narrow tracts actually dwelt in" (Kroeber 1925:305).

The second major subdivision of the eastern Shasta were the Atsugewi, who settled not only on the Pit River, but along the affluents of the Pit River as well, including Burney Creek, Hat Creek, Horse Creek, Beaver Creek and within Dixie Valley. Ethnographers commonly identify two subgroups of the Atsugewi. These are the Apwaruge, occupying the more arid region to the east in the Dixie Valley area, and the Atsuge, who occupied the Hat Creek Valley and the rugged valleys north of Mount Lassen (Johnson 1973:2, Garth 1978:236). Garth further notes that the Apwaruge boundaries extended east from "Bald Mountain through Blacks Mountain to Poison Lake,...part of the Madelaine Plains, Horse Lake, and Eagle Lake...." (1978: 236).

Territorial limits for the Atsugewi are not as clearly defined as for other northern California Indian groups, but Garth (1978:236) summarizes the boundaries as extending from "the western edge of Burney Valley to the tableland

east of Hat Creek...(fringing) the Pit River valley to the north, including Snag Lake and the northern half of Mount Lassen."

Merriam lists two other eastern Shastan groups, the Wahteroo and the Hahtokewuk (IN Heizer 1966:38). He places these groups in the northern region of Siskiyou County, around the confluence of the Klamath and Shasta Rivers.

Population. Population densities for the eastern Shastan groups are more difficult to accurately reconstruct than are estimates for the western Shasta. Virtually no data exist in the literature. Kroeber (1925:308) estimates a total population figure for both the Achomawi and the Atsugewi of about 3,000 individuals. Kroeber notes that in 1910 there survived about 1,000 Achomawi Indians, and he arrives at his 3,000 figure by suggesting that the 1,000 individuals in 1910 represented a third of the original population. The estimate of 3,000 individuals is corroborated by Heizer and Whipple (1951:71) as a realistic pre-contact population estimate. Friedman (1976:10) notes that most scholars today recognize that Kroeber's population estimates are too low. According to King, "Kroeber's figures for California populations are notoriously low..., and most scholars find that doubling his estimates results in figures closer to the cumulative totals of recorded village populations" (1975:29).

Language. Achomawi and Atsugewi are Shastan dialects, and together they constitute the Palaihnihan branch of the Hokan language family. Kroeber suspects that there may have been dialectic variation among the Achomawi due to the extensive settlements stretching from the lower Pit River north to Goose Lake, but Kroeber presents no conclusive evidence to support this (1925:307). Kroeber further notes that "Achomawi" actually refers only to the group living in the Fall River basin, and that the native term "Pomarii" refers to all the speakers of the language.

The Atsugewi group was named by either the group itself or by the neighboring Achomawi. Kroeber notes that "Atsugewi" probably refers only to the group living in the Hat Creek Valley, if it is a term given by the group itself. If the term "Atsugewi" was given by the Achomawi, then it probably refers to the whole group of Atsugewi speakers (1925:316).

Subsistence and economy. The eastern Shastans utilized extensively the plant and animal resources within their territory. Vegetal resources included acorns, which was the primary staple, sunflower seeds, buckeye, sugar pine nuts, roots, tubers, Tiger-lily bulbs, wild onions, epos (a wild parsley), clover, thistle and a variety of berries. Roots, tubers and bulbs were recovered from the soil by use of the digging stick. Vegetal resources were prepared for consumption in a number of ways, such as boiling, roasting, drying, and pounding by portable hopper mortars, pestles, manos and metates.

Deer, elk, antelope, squirrels, rabbit, duck, geese and other small game were hunted as dietary supplements. Hunting methods included snares, bow and arrow, smoking out with fires, and tracking. Hunting was performed by men who usually hunted alone rather than in groups (Garth 1978:242-3). Fishing was extremely important to the Achomawi and Atsugewi, as their territory was criss-crossed with about 50 miles of salmon streams (Olmsted and Stewart 1978:225). In addition to salmon, there were bass, catfish, suckers, trout, crawfish and mussels. Fish were recovered with nets and basketry traps, of which the eastern Shastans had a variety fashioned of milkweed, willow rods and pine-root weft (ibid.).

The Achomawi and the Atsugewi enjoyed generally peaceful relations with most of their neighbors, sharing hunting and gathering areas, and cooperating with neighbors such as the Yana and Maidu in the event that crops failed. Trading was carried on between neighboring groups, with clam shell beads serving as a primary medium of exchange. Dentalia was also used as currency, though not so highly valued.

Technology. Stone tools among the Achomawi and Atsugewi included portable hopper mortars, pestles, manos and metates, all used in food processing. Arrow tips, knives and scrapers were manufactured from obsidian obtained from nearby Glass Mountain near Medicine Lake on the north-central border of Achomawi land. Johnson (1973) notes that pipes and charmstones were fashioned of metamorphic rock "from sources outside the (Atsugewi) region," and that arrows were "flint-tipped" with any "flakable rock." Olmsted and Stewart (1978:229) note that the region is volcanic in origin, thus supplying obsidian for tools, pumice for working arrow shafts and colored minerals for decoration of material items and body ornamentation.

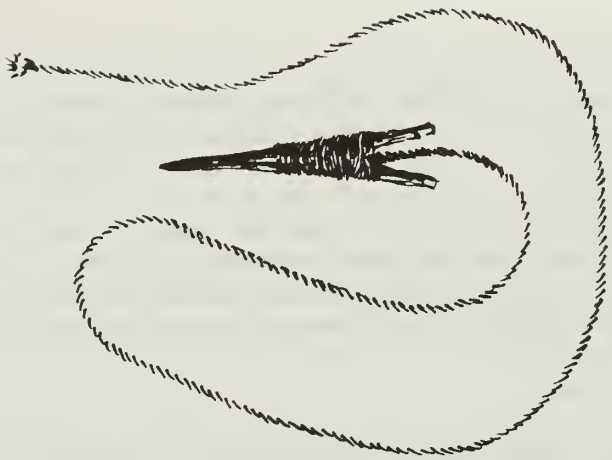


FIGURE 2. Shasta fish harpoon point.

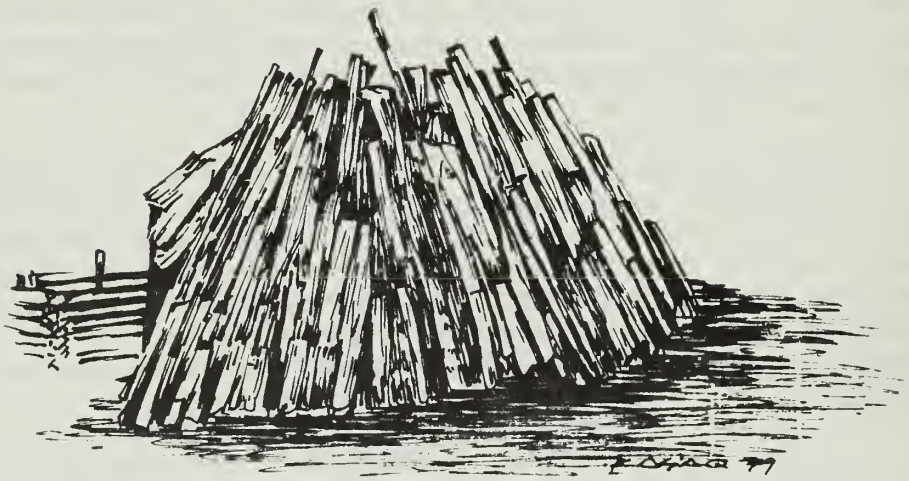


FIGURE 3. Atsugewi bark house.

Breechclouts, skirts and moccasins of buckskin were worn and an additional "shirt" of buckskin was worn in the higher elevations. Clothing was occasionally adorned with porcupine-quill embroidery, and men pierced the septum of their noses to insert shell ornamentation. Women simply tattooed three plain lines under the mouth for body adornment (Kroeber 1925:310-11).

The Achomawi and Atsugewi constructed a limited variety of house structures in this region. Winter houses were semisubterranean, about 15 feet square, constructed with center poles and cross beams of naturally felled pine. The roof was piled with bark slabs, tule, and grass on which was packed a thick coat of earth. Among the Atsugewi, bark houses were constructed by leaning tall slabs of bark against a supporting beam or center post (Garth 1978:236).

Basketry technique was twined, with overlaying of Xerophyllum fiber, a technique not dissimilar to that of the neighboring Hupa and Yurok Indians (Kroeber 1925:310). Decorative components utilized for basketry included maidenhair fern, pine roots and redbud bark (Olmsted and Stewart 1978:229).

Socio-political organization. Olmsted and Stewart (1978:230) report that socio-political organization among the Achomawi was based on "tribelet", a term derived from Kroeber (1932:258) and meaning:

> ...groups of small size, definitely owning a restricted territory, nameless except for their tract or its best-known spot, speaking usually a dialect identical with that of several of their neighbors, but wholly autonomous.

These tribelets functioned independently, but were nevertheless linked through intermarriage and language affiliation.

Political organization included a "chief" wielding very little real power, serving primarily to settle disputes and to organize hunt and work projects. The chief was most commonly a very wealthy man of the village, and other wealthy men served as "headman" to their immediate families or groups. The concept of wealth among the Achomawi was related to the high value placed on industriousness and hard work in their society. Chiefs were selected from the group of males who were both the wealthiest and

most hard working (Bean and Blackburn 1976:338-45).

There were three social classes among the Achomawi based on wealth and industriousness: (1) the hard-working wealthy; (2) the commoners, who were usually associated with the wealthy individuals through work or kinship; and (3) the poor, who were despised because of their lack of industriousness. Thus the wealthiest individuals became the leaders and were responsible for organizing work projects such as fishing and hunting trips, and so on (ibid.).

Brides were purchased through an exchange of gifts, and males could take as many as five wives, provided that they could be supported. Children were much desired, and the birth of a child was surrounded by many ritual activities and taboos, including dances, the making of a cradle by the maternal grandmother, and the avoidance of bickering and fighting (Garth 1978:239-40). Puberty ceremonies were observed for both boys and girls and usually consisted of dances, retreats to the hills, power quests in the mountains for boys, and, for the girls, piercing their ears.

Social gatherings centered around feasting, dancing, and trading. Sweat dances occurred during the winter months and were associated with ritual activity conducted prior to the commencement of a hunt. Crimes and other offenses were settled through payments (ibid.).

Religion and mythology. Achomawi myth recognizes dual and contrasting creators, with the animal "Silver Fox" as the creator of the world. The world was believed to contain innumerable "natural spirits" which were the causes of disease and other occurrences, both good and evil. Shamans were able to manipulate these spirits for purposes of healing, or "preventive medicine," utilizing such methods for the removal of "pains" as sucking, smoking, and sprinkling with water. The 1870 Ghost Dance cult of the Pacific Northwest passed through Achomawi territory, and they participated, as did the Atsugewi, in this cult of revitalization.

Aboriginal groups throughout California often held certain areas or places within their territory that were considered sacred. These were centers reserved for ceremonial activities or were revered due to the impressiveness of the natural environment or according to some other ethnic belief.

Olmsted and Stewart (1978:226) identify several such areas for the Achomawi, referring to these spots as "power places." Power places in the western region of Achomawi territory included Mt. Shasta, Medicine Lake, Black Fox Mountain, Little Black Fox Mountain, Grizzly Mountain, Devil Slide, Bunch Grass Mountain, Burney Peak, Thousand Lakes on Crater Peak, Rising River Spring, Soldier Mountain and Lassen Peak.

In the central portion of Achomawi territory, sacred places were Kramer Ranch Spring, Fox Mountain, Hot Spring, Adin Spring, Big Valley, Hayden Hill, and Eagle Lake. Power places to the east included Rim Rock Canyon, Sugar Hill, Bald Mountain, the area around Antelope Reservoir, Jack Swamp, Payne Mountain, Patterson Lake, Eagle Peak, Clear Lake, Emerson Peak, Flournoy Ranch Spring, Stone Canyon, Likely Mountain, South Fork Mountain, Blue Lake, and McDonald Peak. The specific significance of each power place is not available in the ethnographic record.

Ethnohistory. The first contact between the Shastan Indians and Whites may have occurred in 1817, when Spanish explorer Luis Arguello travelled throughout northern California. He identified a "very high hill" that could very well have been Mt. Shasta. Silver (1978b) suggests that the first contact was with the fur trappers passing through the area between 1820 and the 1830's. However, the first documented contact in the area is by Peter Skene Ogden, who spotted Mt. Shasta on February 14, 1827, and recorded its name as "Mount Sastise", utilizing the local Indian name (Eichorn 1957:3). Boynton notes (U.S. Forest Service n.d.:II-121) "...in late March 1829... Alexander McLeod of the Hudson's Bay Company spent a few days trapping beaver on the Lower Pit River....," and on October 28, 1832, John Work, a trapper for the Hudson's Bay Company, spent three days in the vicinity of the North Fork, Pit River, and the present site of Alturas (ibid.).

The old California-Oregon Trail, which followed the Trinity River through Scott Valley, ran through Shastan territory. Trappers used this trail in the 1820's, and during the 1830's and 1840's the trail was utilized primarily for cattle drives from Mexico into Oregon. Joseph B. Chiles led settlers through the area in 1843, passing along the Pit River and beside Goose Lake.

In 1848-1849, Peter Lassen established the Lassen Trail,

which, according to Boynton (ibid.):

> ...diverged...at the south end of Goose Lake, travelled down the North Fork of the Pit River and down through Warm Springs Valley,...(and crossing) over the Pit River...at the present location of the Canby Bridge...on Highway 299.

The discovery of gold on the Trinity River in 1848 and at Yreka Flat in 1851 brought a massive influx of Euroamericans to the region. The sudden presence of Euroamericans threatened the balanced use of natural resources among the Shastans and introduced new diseases to the aboriginal population.

At no time were the deleterious consequences of European contact more dramatically evidenced than during the period shortly following 1851. At this time the main focal point of Shastan Indian activity was centered around the newly constructed Fort Jones complex, which was established to the west of Yreka between 1851 and 1855. This brief period saw large numbers of Shastan Indians die off from a variety of offenses, including cultural disruption and disintegration and disease (see Heizer 1974).

In 1851 an unratified treaty was made with the Shastans to establish a reservation in Scott Valley in what is today Siskiyou County (Heizer 1972:97-100). The ensuing warfare between Whites and Shastan Indians has since been called the "Rogue River Wars" (Heizer 1974:41-99 includes some of the official correspondence about activities during this period).

By 1854 permanent settlers were migrating to the area for purposes of ranching, farming and lumbering, which soon replaced gold mining in local economic importance (Wilson 1910:5). Between 1854 and 1858, early settlers established permanent residence in the area of present-day Mt. Shasta City. These included C. Daley, John P. King, R. Walling, John C. Gordon, John Sires, and Justin H. Sission, who in 1857 filed claim to 420 acres later ceded to the Southern Pacific Railroad.

Mild friction continued between Indians and Whites, and in 1856 Indians attacked a stagecoach and murdered the ferry operators at the Fall River ferry. This led to White retaliation, and by 1857 Fort Crook was established at Fall River to remedy and control the explosive situation

(Garth 1978:243). The effect of Fort Crook was to further agitate the situation, and in 1859 the Atsugewi attacked and massacred Whites at Hat Creek, an action which was subsequently avenged by a massacre of an Indian village on Beaver Creek (ibid.). It was at this time that plans for a reservation at Round Valley were made, and the Indians of the area were shortly taken to it.

The mines played out in the early 1860's, but permanent settlers continued to arrive in the area. A post office was established near Mt. Shasta City in 1866, and Justin Sission was named postmaster. Permanent towns began to spring up. The 420 acres that Sission ceded to the railroad had been ceded in exchange for a depot hotel and saloon.

Sission proceeded to survey a townsite and began to auction lots. Within three months of the lot auction, a store, saloon, stable, and four sawmills had been constructed within the area. This townsite became Mt. Shasta City, the primary town in the area for many years during the last part of the 19th Century and the early 20th Century.

The most important economic aspect of the area today is the lumbering and mill industry, with agriculture being the next major economic source. The Achomawi and Atsugewi Indians remain in the area and with a population of about 750 individuals form "one of the largest Indian groups in California" (Olmsted and Stewart 1978:234-5). The Pit River Indians (as most of the Achomawi population call themselves today) have remained active throughout the historic period, playing an active role in opposing the Compromise Claim settlement of 1963, continuing their protests until 1972.

In December of 1977 the Pit River Indians demanded that a 6,000 acre area in the McArthur-Burney Falls Memorial State Park and known as the Ahjumawi Lava Springs State Park be returned to Indian ownership. The area, located about ten miles north of Fall River Mills, was purchased by the State of California in 1975 from cattle rancher Ivy Horr, and the Indians claim that the land should be returned to Indian ownership since it was originally owned by the Pit River Indians and contains resources of religious and cultural significance to them.

The area has been classified as a State Park (June 1977), but development is impeded by access problems. In order to begin development of the area, land must be crossed that is held by the Bureau of Indian Affairs, and the Ahjumawi State Park area remains un-evaluated in terms of Indian graves, artifacts, and other cultural and historical resources. According to state ranger Bob Allen (1979 Personal Communication), the state has a three-year agreement with the Bureau of Indian Affairs to cross their land for purposes of patrolling the Ahjumawi Lava Springs State Park, and state officials are working closely with local Indians to begin to identify sites of historic or prehistoric significance in the area. No data recovery program has been undertaken, although some survey work has been done, the results of which are on file with the interpretive office of the Historic Preservation division of the State Parks and Recreation department.

MODOC

Territory. A great deal of attention has been given to questions surrounding the cultural affiliation of the Modoc Indians. A significant number of ethnographers discuss the Klamath and the Modoc Indians as comprising separate cultures sharing one geographic location. Kroeber (1925:33) initially placed them within the California Culture Area, but later (1937) suggested that they were more closely aligned with Great Basin groups. Ray (1963:v) notes that the Modoc are "...a tribe at the crossroads of four culture areas: California, the Great Basin, the Plateau and the Northwest Coast...." Moreover, Ray notes that the Modoc were the northernmost group of Californians, and that "...their version of the culture was so highly divergent that they never would have been admitted to the family by most of the tribes to the south."

In general, then, the Modoc, together with the Klamath, occupied territory covering parts of what are now eastern Siskiyou and Modoc Counties, which included areas in the drainage basins of Upper and Lower Klamath Lakes and Tule or Rhett Lake. The Modoc centered around the Lower Klamath Lake, Clear Lake, and Lost River in northernmost California and extending into southern Oregon. Their southern boundary was the divide between the Klamath Lake drainage and the Pit River drainage in Shasta County. To the west they ranged to Butte Lake and Butte Creek in Siskiyou County, with their westernmost boundary falling at the watershed

between the drainages of Klamath Lake and the Rogue River. To the east their territory bounded around the head of Lost River and along Goose Lake in Modoc County (Kroeber 1925:318, Barrett 1910: 239-241). Modoc territory juts into the BLM planning unit "Middle Klamath", 03-02.

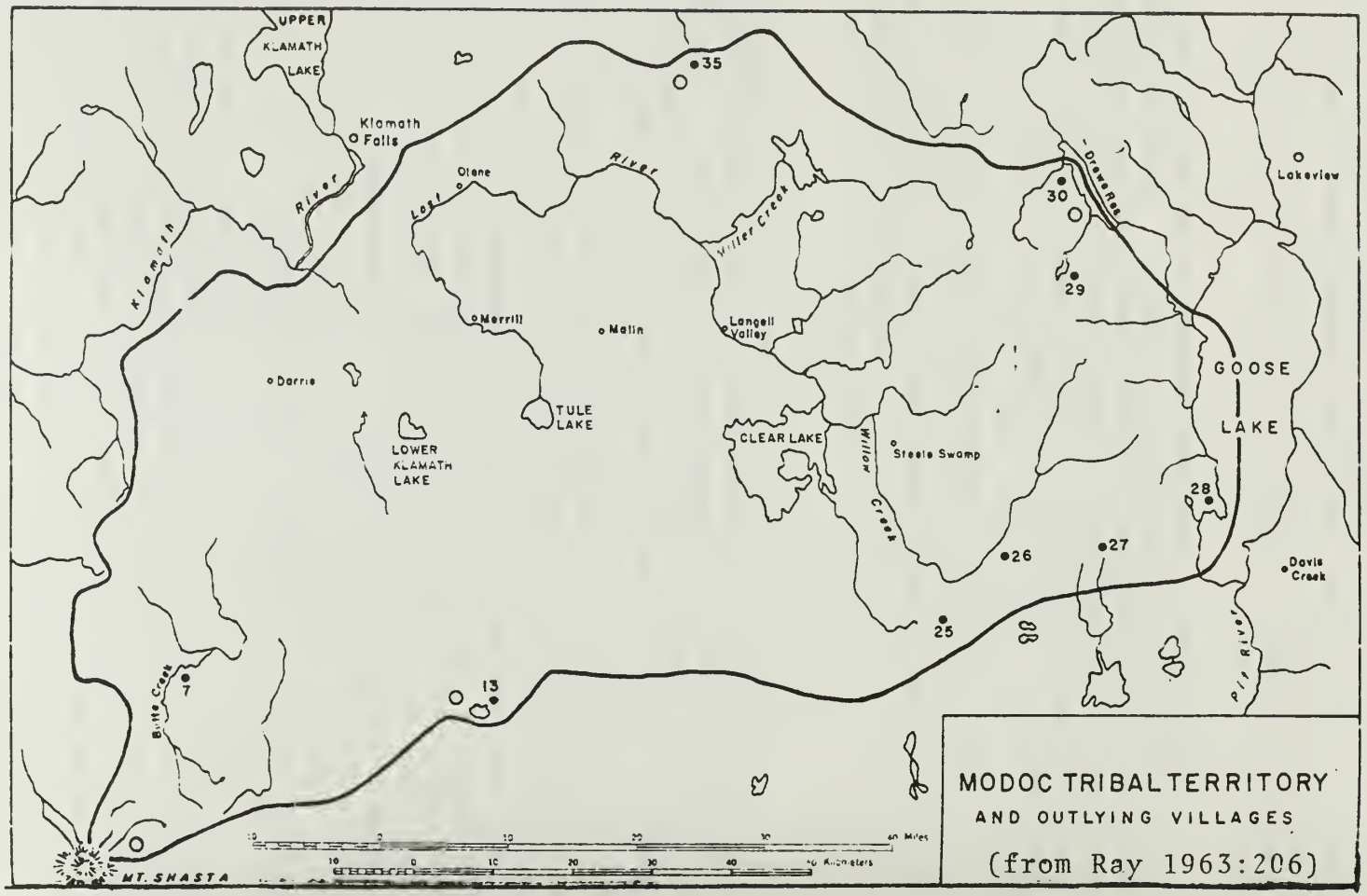
Population. Various estimates have been made for the pre-contact population of the Modoc. Kroeber (1925:320) suggests that before contact the Modoc may have numbered "...about 600 or 700, of whom perhaps half or less lived in what is now California." Heizer and Whipple give a similar estimate of 500 for the Modoc in California (1951:71).

Davis (1974:10) estimates Modoc population at "...600 Indians upon arrival of whites." The census of 1881 is reported by Gatschet (1890:lxxvi) which gives the Modoc population at 122 individuals, a substantial decrease from the estimates given by ethnographers for the pre- or at-contact population.

Friedman (1976:10) suggests that the reason that many of the ethnographic estimates of Modoc population are similar is that "...more recent works tend to rely on Kroeber's original figures as a source, rather than computing totals based on recorded village size."

Language. The Modoc language was classified by Kroeber (1925:318), Powers (1877:252-66), and Merriam as belonging to the Lutuamian language family, which is comprised of only two languages: Modoc and Klamath. Originally thought to be an independent stock, Lutuamian is now considered to be Sahaptin, a language family of Penutian affiliation (Ray 1963:xv). Johnson (1969:11) notes that P. Wenger's comparative linguistic study of languages "...failed to group Klamath-Modoc...with any other language or languages, and showed that Klamath-Modoc is very unlike California Penutian and is only slightly closer to Oregon Penutian."

Subsistence and economy. In this region of abundant lakes and streams, fish were a particularly important food resource. Fish could be prepared by drying or eating fresh, but it was often ground with mortar and pestle. Waterfowl, such as ducks, were captured in nets, which was also a principal method of collecting fish. In addition, fishhooks, lances and toggles were employed to take fish from streams and lakes. Deer and small game were hunted



Map 3

Tribal territory of the Modoc

and prepared by drying, beating with mortar and pestle, or consumed uncooked.

Acorn availability was restricted in this region, so the Modoc concentrated on gathering wokas seeds, which, when ground, formed a major staple of the Modoc diet. These are the seeds, or bulbs, of the large yellow water lily, and are prepared by grinding into a gruel, roasting or drying. Kroeber suggests that the abundance and popularity of the wokas led to the development of the two-horned mulling stone, which primarily functioned to crack the shells of the wokas seeds. In addition, wokas root bulbs were also consumed in large quantities.

An additional "economic" aspect of Modoc life involved raiding warfare, which enabled them to obtain horses during protohistoric times and, sometimes, slaves. Kroeber reports some dentalia used as currency, but he notes that the Modoc were quite isolated from their neighbors, which suggests a limited economy derived from trade (Kroeber 1925:318-35).

Ray (1963:18-183) outlines the seasonal round for the Modoc. When the snow began to melt in March the Modoc left their winter settlements on lakeshores and streams for spring fishing for suckers and the collection of desert root crops. At the end of the fishing season, the activity focused on the collection of epos, a root which formed a major portion of the Modoc diet during this part of the year. The summer months from June to August were spent collecting camas root, fishing for trout, and hunting for waterfowl, small game, antelope, and mountain sheep. During the autumn months of August and September, the emphasis was on varied resources, such as wokas seeds, other seeds, berries, fruits, roots, and fish. In late September the Modoc moved to higher elevations, with men hunting deer and elk, and women gathering fruits and berries. When the snows began to fall, the Modoc returned to their villages on lakeshores and streams.

Technology. While the Modoc manufactured many different material items for their use and consumption, the Modoc culture is distinct in its remarkable use of locally-available tule and bulrush. Kroeber (1925:323-31) notes that mats, rafts, basketry, moccasins, baby cradles, quivers and other items were crafted of tule or bulrush. Basketry was fashioned of tule and/or bulrush, utilizing a twining process

with overlaying of Xerophyllum, although most of their baskets are of a simple, plain-twining style. Clothing was made of either natural plant fibers or animal skins. Generally, women wore a short, two-piece skirt and men wore either nothing or a small skin wrapped around the hips. Moccasins of tule and bulrush were worn, and during the cold winter months blankets of sea-otter, land otter, wildcat, deer or rabbit fur were preferred to provide warm protection (Heizer and Whipple 1951:6-20).

The structures of the Modoc were of a type very similar to their neighbors the Achomawi, Yuki, and Miwok, consisting of earth-covered semi-subterranean houses. Conically-shaped, these houses were built by excavating a circle, then leaning planks of wood against a center post(s) with the exterior covered with packed earth.

Stone implements included the muller, used for the processing of the wokas seeds, small mortars and pestles, and a conical-shaped maul used to drive wedges in woodworking. In addition, there were grooved net sinkers of triangular or elliptical shape, which were used to weigh down the bottom of gill nets.

Other items of Modoc material culture included dugout canoes of fir logs, ranging from 12 to 30 feet in length. The prow and stern sloped upward, with no sharp or severe lines in the design. Paddles were made of cedar, and sometimes tule mat rafts were made and attached alongside the canoe. Hunting tools included the bow and arrow, snares for the capture of small game and deer, and nets of plant fibers stretched along the surface of streams and lakes to capture waterfowl (Kroeber 1925, Barrett 1910: 246-7).

Socio-political organization. Kroeber notes (1925: 320-35) that "...social...institutions are practically unkown..." among the Modoc. A thorough survey of available ethnographic sources reveals little data on the political or social organization of the Modoc. Even the recent Handbook of North American Indians (1978) fails to include a chapter or section dealing with Modoc culture. Apparently social disintegration had reached such a point by the time that ethnographers began to record data that Kroeber was able to elicit very little data from his informants. Kroeber does suggest that there existed a hereditary chieftainship with considerable authority over the tribe. The Modoc also appear to have achieved a high level of

tribal unity, which contributed to their successful raiding and their reputation for bravery (Kroeber 1925; Heizer and Whipple 1951; Barrett 1910; Merriam 1955).

Religion and mythology. Religious components of Modoc culture are nearly as unkown as are aspects of sociopolitical organization (Kroeber 1925:320-3). Again this is most likely attributable to the social disintegration of Modoc culture prior to the arrival of ethnographers. However, Kroeber notes that they did have shamans and some ritual, and that they may have participated in the Ghost Dance religion, a revitalistic movement that passed through northern California between 1870 and 1873. Myth includes an "Ancient old man", who created mankind. The Modoc also recognize "Silver Fox", a mythical personage common to northern California aborigonal groups, and Kroeber hastens to point out that much of Modoc religion and myth shares elements common with other northern California groups. The dead were disposed through cremation (Heizer and Whipple 1951:37).

Ethnohistory. The history of the Modoc is of special interest to the historian of northern California due to the intensity of conflict between the Indians and the Whites, dubbed the "Modoc War." Much has been written on the Modoc War, including Kit Carson's recollections in his Life and Adventures (Peters 1874). Other major sources include Brown (1951), Brady (1974), Dillon (1973), Payne (1938), and Thompson (1971).

The Modoc were probably first contacted by Euroamericans when the mountain men of the Hudson's Bay Company passed through the area in the early 1800's. The Modoc were located too far north to have been affected by the Spanish, Mexican or Russian presences in California, and the Modoc were too far inland to be contacted by explorers and others who anchored along the northern California coast.

The discovery of gold throughout northern California and the development of overland trails to the Oregon Country and to California brought an influx of Euroamericans to the region, which heightened stress as increasing pressures were placed upon the natural resources of the area. The loss of hunting grounds and depletion of the local vegetal and fish resources led to dramatic conflicts with the new settlers and emigrants (Brown 1951:1).

The Modoc regularly attacked and massacred overland emigrant parties, leading in 1863 to the establishment of a military post at Fort Klamath for the protection of emigrants. An uneasy, semi-peaceful co-existence ensued, but even with the protection of the Fort, there were still murders, violence, and other expressions of hostility between the Indians and the Whites (Dillon 1973:34-9).

In 1869 a treaty was ratified in which the Modoc agreed to remove themselves to a reservation. Also living on the reservation, however, were Klamath Indians, a traditional enemy of the Modoc. All efforts at reconciliation failed, and so the Modocs left the reservation for their homeland under the leadership of their chief, "Captain Jack" (Brady 1974). This move greatly distressed the settlers in the area, and Army General Edward S. Canby ordered that a peaceful settlement be made. Difficulties arose and Captain James Jackson was sent from Fort Klamath to force the Modocs under Captain Jack to return to the reservation.

The ensuing battle, which lasted from November of 1872 to the spring of 1873 is what is referred to as the Modoc War. Captain Jack and his Indians managed to hold off the military for months in vicious, almost guerilla warfare in the lava-beds area of Modoc territory. However, the United States military finally prevailed, capturing Captain Jack on June 1, 1873 (Brady 1974).

"War trials" were held, and Captain Jack and three other Modoc leaders were hung on October 3, 1873, thus ending the Modoc War. As soon as the fighting stopped, a flood of immigrants entered the area. "The Modoc leaders had hardly been safely hanged before Conestoga wagons again began rolling back to the long disputed territory" (Brown 1951:109).

The few Indian survivors of the Modoc War were removed to a reservation at Baxter Springs, Kansas, and in 1907 there remained about 54 Modoc Indians alive on the Baxter Springs reservation (Brady 1974:255).

CHIMARIKO

Territory. The Chimariko were a small group, occupying

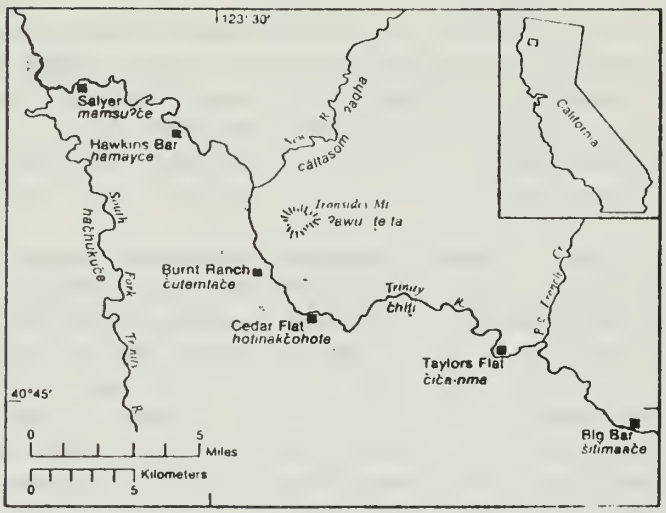
only a twenty-mile stretch of land along the Trinity River at the eastern edge of what is now Trinity County. Their boundaries extended from the mouth of the South Fork of the Trinity to Taylor's Flat at French Creek, in the BLM Trinity planning unit, 03-04. It is suggested that at some earlier time the Chimariko boundaries may have extended along the South Fork from 15 to 20 miles south of Hyampom, but the data to support this are inconclusive (Silver 1978:205). It is possible that in pre-contact times the Wintu expanded their territory, thus pushing the Chimariko further west down the Trinity River, but by contact times the Chimariko had befriended their neighbors, which included the New River Shasta, the Konomihu, the Wintun, and the Hupa (Kroeber 1925:109, Dixon 1910a: 295-7) (see Map 4).

Chimariko territory is mountainous, covered with dense forests and creeks. Dixon reports that the small group of the Chimariko occupied just a few tiny villages in their area. The largest of these was at Burnt Ranch, or "Tsuda'mdadji," on the Trinity River near Ironside Mountain. Villages were also located at Cedar Flat, Hawkin's Bar, Taylor's Flat on French Creek, Big Bar near the confluence of Manzanita Creek and the Trinity River, and one other near the mouth of the South Fork on the Trinity River (Dixon 1910:297).

Population. There are no pre-contact population estimates available for the Chimariko, but Kroeber (1925) estimates that in 1849 the Chimariko population numbered about 250, but he points out that by 1906 "...there remained a toothless old woman and a crazy old man."

Language. The Chimariko language is classified by Kroeber (1925:109) as Hokan in affiliation. Kroeber notes, however, that the diversification of Chimariko language from other Hokan-affiliated languages demonstrates "...extreme example of the degree to which aboriginal speech diversification had been carried in California" (1925:109). "Chimariko" is the name that this group called itself, which derived from "Chimar," meaning "people" (Kroeber 1925:110).

Subsistence and economy. As with many other aboriginal groups in California, acorns provided the main vegetal resource for the Chimariko. A number of other vegetal resources supplemented the diet, including pine nuts, wild seeds, berries, tubers, roots and other nuts. These resources were gathered



Map 4

Tribal territory of the Chimariko
(from Heizer 1978:207)

by both men and women with digging sticks and were prepared in a variety of ways, including the baking of acorn bread, parching seeds with hot stones or coals, and baking vegetal products in earth ovens (Silver 1978a:208).

Bear, deer and elk were plentiful in this region, and hunting was the responsibility of males. Ritual practices, such as bathing, sexual abstinence, and tobacco smoking were observed prior to hunting. Deer and small animals were snared in spring-pole traps, and bear were smoked out or driven by the use of two converging fires. Meat was most often boiled for consumption, but smoking and drying were also practiced.

Lastly, fishing was also important as the Trinity River provided significant supplies of salmon. Fish were taken with nets and traps, but harpooning, shooting with bow and arrow, and grasping with the bare hands were not uncommon practices. Fish was either boiled or smoke-dried for consumption (Silver 1978:208).

Technology. The Chimariko manufactured a number of items for their use, including houses, clothing, fishing implements, hunting and gathering tools, baskets, bows and arrows, and other items and decorative crafts. Bows were fashioned of yew wood, and obsidian arrowtips and knives were traded from the neighboring Wintu Indians. Hafted stone axes were produced by placing a large retouched flake of stone into a split of a tree limb. The tree would grow around the axe and the limb would then be cut off, producing a complete hafted axe (Silver 1978a:208).

Basketry technique was twining, resembling the baskets of the Wintu Indians. According to Dixon (1910:298-300) Chimariko basketry was highly developed, but no specimens are extant. Willow bark was utilized to add color to Chimariko basketry. Hopper baskets were woven for use in grinding.

Houses were of wood, usually of fir-bark slabs vertically arranged in a circle or oval, and a ridge-pole, supported by two posts, held the roof. Sweathouses were constructed similarly, accommodating eight to ten men. Structures were covered with bark and earth.

Chimariko men wore a deer-skin wrapped around their hips, and women wore a two-piece skirt of buckskin. During the winter months moccasins or snow-shoes of hazel stick

were worn. Body ornamentation included pierced ears, decorated with dentalia, abalone, and bone beads (ibid.)

Locally-available wood such as pine and yew were utilized to make small dugout canoes, stirring spoons, meat platters and carved cylindrical chests for storage (Silver 1978:208).

Socio-political organization. The village community was the most significant social unit among the Chimariko. The village had one hereditary chief, or "head-man," who wielded considerable authority over the group, settling disputes and leading in warfare.

Social status was achieved by the accumulation of wealth, which was measured by the possession of dentalia, clam shell beads, fox-skin blankets, red obsidian, woodpecker scalps, trays of elkhorn, horn spoons, shell-decorated aprons for the women and shell-decorated belts (ibid.).

Marriage was monogamous, with wives being purchased from her parents. The levirate was also practiced, while very prominent men could practice polygamy with unrelated women.

Puberty rites were practiced for females, but none were practiced for the males. Females were confined during the menstrual period, followed by a bath of purification (Dixon 1910:293-306, Silver 1978a:209).

Religion and mythology. Kroeber reports that Chimariko religion was simple, but Dixon presents a more detailed discussion, in which he notes that the Chimariko had male and female shamans and participated in a few simple religious dances. Silver(1978a) notes that the Chimariko practiced a sweat dance and an annual summer dance, but she notes that these were of little, if any, ceremonial importance.

Mythology includes a cosmogony in which the two principal supernaturals are the dog and the coyote. A wind blows and destroys all people, and then later a flood destroys all except for one man. This man saves a bone fragment, which becomes a girl. He marries her, and together they re-populate the Chimariko world.

Ethnohistory. The few sources that deal with Chimariko

history are primarily related to linguistic studies, e.g. Harrington (1921-1928). Major sources for Chimariko ethnography and history include Silver (1978a), Driver (1939), Kroeber (1925) and Powers (1877).

The earliest contact with Euroamericans was probably with the few trappers of the Hudson's Bay Company who passed through the area in the years between 1825 and 1840 (Farris and Smith 1882). The old California-Oregon Trail, which was used by the fur trappers (Lantis et al. 1963), passed near the territory of the Chimariko.

The discovery of gold on the Trinity River in 1848 brought an influx of miners to the area. The presence of the miners led to a serious depletion of salmon resources in the river that threatened the continued existence of the Chimariko, leading to conflict in the 1860's (Silver 1978a:205). Kroeber notes that "the struggle must have been bitter and was evidently the chief cause of the rapid diminution of the little tribe" (1925:109).

For a brief period the Chimariko had the "upper hand", but soon the Whites prevailed. As Powers notes (1877:94-5):

> (The Chimariko) were hunted to the death, shot down one by one, massacred in groups, driven over precipices....In the summer of 1871...there was not an Indian left. The gold was gone, too, and the miners for the greater part, and amid the stupendous ripping-up and wreck of the earth which the miners leave behind them, in this grim and rock-bound canyon...one finds himself indulging in this reflection: 'The gold is gone, to return no more; the white man wanted nothing else; the Trinity now has nothing but its salmon to offer; the Indian wanted nothing else'.

The few remaining Chimariko scattered to seek refuge with their neighbors, the Shastans, until by 1906 there were only two surviving Chimariko.

The history of the Chimariko is relatively unremarkable in relation to major roles in expeditions, trade, mining, warfare, agricultural settlements, or disease. They were a tiny nation at contact, and only a brief conflict with Euroamerican civilization was required to destroy this isolated group.

YANA

Territory. On the basis of dialect and geographic distribution, the Yana have been separated into four groups: Northern, Central and Southern Yana, and the Yahi. Overall the Yana occupied territory located within the upper Sacramento Valley and foothills east of the Sacramento River. Some ethnographic accounts note that the western border of their territory was located perhaps 10-20 miles east of the Sacramento River (Waterman 1918: 37-41, Powell 1891:135): on the other hand, this situation may reflect the retreat of the Yana into the foothills as a result of pressure from the Wintun in late prehistoric times and from Euroamerican settlers after about 1850. In other words, in earlier prehistoric times the western border of their territory or their range may have extended as far west as the Sacramento River.

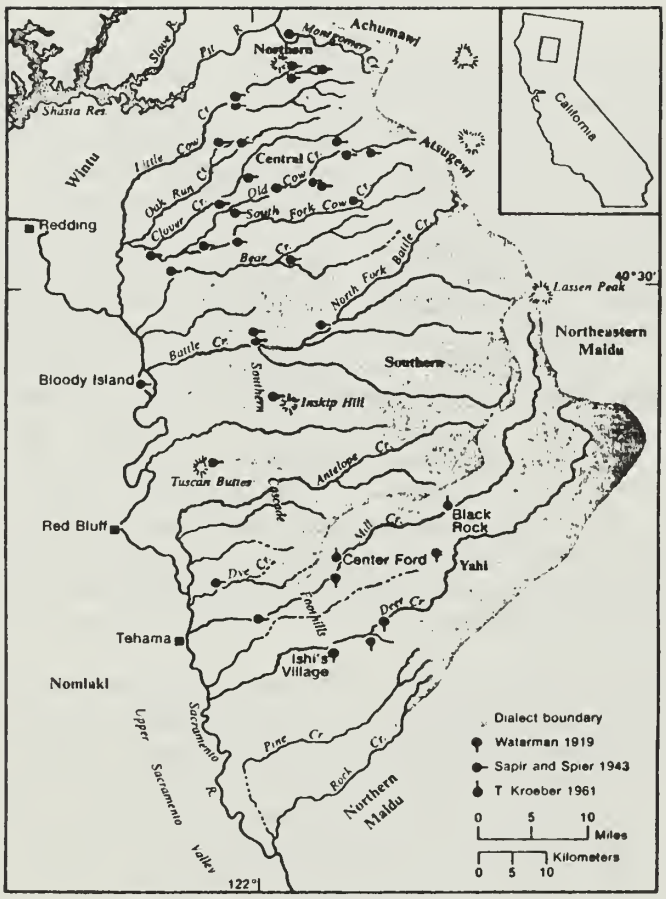
On the east, Yana territory extended to the upper Deer Creek drainage, northward through the upper Battle, Cow and Montgomery Creek drainages. The Pit River formed the northern perimeter of Yana territory, while the ridge separating Deer Creek from Butte Creek formed the approximate southern boundary.

Elevation within this area ranges from 300 to over 10,000 feet above mean sea level, with the area characterized by a great variety of floral and faunal resources. This territory includes portions of the following Inventory Area planning units: Yolla Bolly, 03-09; Feather River, 03-08; and Shasta, 03-06.

Population. Heizer and Whipple (1951:71) estimate the pre-contact population of the Yana at about 1500 individuals, a figure derived from Kroeber's (1925:339) earlier estimate. Theodora Kroeber suggests (1961:15) that the Yana may have numbered as many as 2,000 to 3,000 individuals prior to Euroamerican contact.

Language. The Yana dialects were all Hokan in affiliation. The northern Yana spoke a dialect known as "Gari'i" while the Central Yana spoke "Gata'i". Kroeber (1925:339) notes that both the Southern Yana as well as the Yahi dialects were nearly extinct by the early 20th Century.

The Yana shared a speech characteristic in which men and women used different speech forms. As Kroeber (1925:337)



Map 5

Tribal territory of the Yana
(from Heizer 1978:361)

notes, "Men spoke the women's forms when conversing with them; (but) women always spoke female."

Subsistence and economy. As with many other California groups, acorns provided the most important food source among the Yana. Acorns were gathered in late September and October, dried on tule mats, and then stored. They were processed and consumed as needed during the winter months.

A variety of other vegetal foods were collected in large quantities and included roots, tubers, bulbs and a variety of seeds and nuts such as Buckeye and pine nuts. These vegetal resources were augmented with animal protein derived from a variety of sources including insects, earthworms and a number of small mammalian species including some rodents. However, deer constituted the most important source of animal protein among the Yana, and were usually stalked individually using decoys and the bow and arrow. Native dogs were also used and occasionally entire villages would cooperate in communal deer hunts. Deadfalls and pits were used in acquiring deer as well as rabbits.

Lastly, fishing was also an important food-producing activity among the Yana. Salmon were taken with spears and harpoons, while bone gorges, seine nets, traps and points were used to take trout and suckers. Some of the fish harvest was not consumed immediately but was dried and stored for later use.

The Yana had a fairly secure food supply during the fall months when salmon, acorns, buckeye, deer and other food sources were available. However, during the hot summers, long after the winter supplies had been exhausted and at a time when many of the available plant foods had either already been harvested or were withering under the onslaught of summer, the Yana apparently found it quite difficult to find sufficient food below about 2,500 feet within their territory. Their search for food during this period led them to higher elevations and a variety of seed plants, berries and other vegetal resources as well as deer.

In securing, processing, and distributing the food resources within their territory, the Yana practiced a sexual division of labor which was similar to many other groups throughout California and the world. The men were responsible for hunting, fishing, occasional raiding, and the manufacture of bows, arrows, and harpoons, while the

women gathered nuts and roots, ground and processed a variety of vegetal foods, dried meat, made basketry, repaired huts, and performed a large number of additional tasks.

A simple monetary system was utilized by the Yana, at least during the latter portions of the prehistoric period. The system utilized dentalia and clam shell disks as money (Kroeber 1925:340).

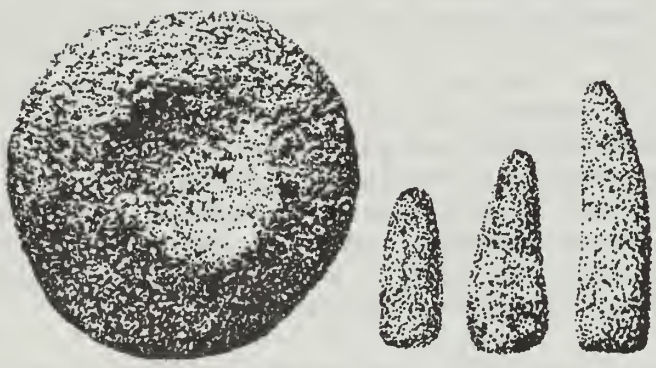
Technology. The Yana manufactured baskets, bows and arrows, harpoons, houses, clothing and a variety of other implements and decorative items. Principal grinding implements were flat slab hopper mortars, flat-ended pestles, and unifacially flattened manos which were used with slab or bedrock metates (Gifford and Klimek 1939:97). Bows were produced from locally available mahogany, juniper, hazel and yew, with yew being the preferred wood. Sinew-backed bows were preferred to unbacked implements due to the greater thrust they could produce. Arrows were often composite artifacts, with hardwood foreshafts of hazel or buckeye and with cane or currant shafts; solid arrows were also produced of cane or serviceberry.

A variety of arrow tips were manufactured from obsidian, basalt and, during the latter Protohistoric period, of glass. Blunt arrows were produced for stunning birds and small game while small serrated obsidian and basalt point tips were used for hunting larger game. These arrow tips were produced with antler and bone flakers. Additional bone implements included antler wedges, bone awls, harpoon toggles, fish gorges and gambling pieces produced from rodent teeth as well as cut deer bones. Most of the tool manufacturing activities apparently took place during the winter months when the Yana enjoyed a brief respite from food-procuring activities (Kroeber 1961:38).

Basketry manufacture was an important industry among the Yana, who were located between two major basketry traditions. The northern and Central Yana used the overlaid twining technique, while the Yahi had some knowledge of coiling that was similar to the Maidu (Kroeber 1925:340). However, twined basketry with and without overlay designs is known from archaeological sites in Yahi territory, while twined basketry without overlay has been recovered from an archaeological site in Antelope Creek canyon in Southern Yana territory (Dawson 1971 IN Johnson 1978:365). Johnson (ibid.) suggests that twining with overlay decoration was

Yana arrowheads

Yahi
two-pronged
harpoon



Yana hopper mortar and pestles

FIGURE 4. Yana implements.

widely practiced among all the Yana subgroups, with coiled baskets representing a relatively recent introduction from the Maidu and Wintun.

The Yana also produced other kinds of textiles, including cords and ropes of milkweed fiber and Indian hemp. In addition, peeled bark from trees, shrubs and vines was pounded, shredded and twisted into ropes and lashings, with the heavier examples being used for nets, skirts and tying objects together, and the lighter examples being used as fish nets (Gifford and Klimek 1939:80).

During the course of procuring food resources and manufacturing various implements as outlined above, the Yana manufactured and occupied a number of types of structures. The Northern and Central Yana produced substantial earth-covered multi-family dwellings and assembly houses. These large structures had one center post, with entry achieved via the smoke hole in the roof. The Southern Yana, however, apparently made little use of such structures (Gifford and Klimek 1939:82). In addition to these large structures, all Yana groups constructed conical bark houses made from long slabs of cedar or pine bark leaned against a pole framework, although the forms produced by the Northern and Central Yana were apparently somewhat larger and housed more individuals than the examples produced by the Southern Yana and Yahi. In all cases, these smaller structures were characterized by a shallow oval depression from 3 to 5 meters in diameter, with dirt banked up from 1 to 1.5 meters on the outside to keep the water out (Kroeber 1961:32-3). In the southern foothills these conical bark houses were apparently replaced by dome-shaped un-excavated single-family structures made of poles and covered with branches, brush and skins. Smaller and less substantial structures were also produced for girls' puberty rites, while thatched summer shelters were constructed on hunting and gathering trips.

Socio-political organization. Large, extended families were comparatively rare among the Yana, a feature which was clearly related to the level of technology achieved and the nature of the resources to which that technology was applied. In many areas of California, including particularly the valley foothills of northern California, dense populations could simply not be supported for extended periods of time.

Nevertheless, numerous tribelets existed within Yana

territory, each one of which usually consisted of a major village at which the principal chief and assembly house were located, and several smaller allied villages (Kroeber 1961:25-50). In most cases, these tribelets were also political units, and hence claimed ownership not only to the land but to seed-bearing tracts and fishing locales as well (Gifford and Klimek 1939:84).

Chiefly status among the Yana was apparently inherited, thereby fostering the situation in which chiefs had access to more of the tribelet's riches and usually practiced polygamy. However, the chiefs' powers were definitely limited, and his decisions on various matters were more akin to "suggestions" than commands (ibid.).

As Johnson (1978:364) notes, the existence of a word for bastard, ostracism for illegitimacy, primogeniture inheritance of the office of chief through the male line, and other sex discrimination indicate the development of differential status classes among the Yana. Moreover, men and women often isolated themselves from one another, the men retiring to a men's house or "sweat-house" and the women retiring to a small house for a variety of purposes, including their periods of menstruation (Kroeber 1961:33-4). The Yana also had a strong mother-in-law taboo for husbands, and residence appears to have been the general rule following marriage (Gifford and Klimek 1939:83-4). This latter feature may in turn have been related to the important role which hunting assumed in Yana economy.

Religion and mythology. Kroeber (1925:340-1) noted that "...mythology, symbolism, ritual...are all of the plainest, most straightforward, and simple character." He goes on to note that Yana myths were usually quite simple, reflecting very little in terms of cosmogony or the origin of customs. Apparently, there was a creative trinity of Rabbit, Grey Squirrel, and Lizard, but Kroeber does not elaborate on other possible mythic elements and their juxtaposition within the overall scheme. Dixon (1910b:1-235) has prepared extensive texts of Yana myth, although these will not be elaborated here.

Time perception followed the circadian rhythm of night and day and the four seasons. Spring was considered a time of rebirth and renewal, summer a time of work, fall a time of harvest and storage, and winter a time of rest and quiet (Kroeber 1925, Kroeber 1961).

Ethnohistory. The history of the Yana is fairly well recorded relative to the scant histories available for other northern California groups. The major reason for this is related to the great interest generated by the dramatic discovery of one surviving Yahi Indian, "Ishi", in 1911. Work on Yana history has been undertaken by Theodora Kroeber (1961), A.L. Kroeber (1925), W.H. Hutchinson (1948), and T.T. Waterman (1918), among others.

Trappers from the Hudson's Bay Company and the American Fur Company crossed the Sierra Nevada between 1825 and about 1840, probably crossing along the Pit River and down along the Sacramento River (Farris and Smith 1882: 144-5). Thus, it is entirely possible that the Yana were contacted at this time, although the evidence is not unequivocable. In 1844 the Mexican government issued a series of land grants in the Sacramento Valley, and it is with these grants that we may be certain that the Yana were contacted.

Land located within northern Yana territory was granted to Pierson B. Reading and was named the San Buena Ventura grant. The central Yana bordered on another grant to Job F. Dye, Rio de los Berrendos, as did the grant La Barranca Colorado. Bordering on the southern Yana was the Las Flores grant to William Chard. Albert G. Toomes was granted Rio de los Molinos and Peter Lassen was granted Bosquejo. Both of these lay directly west of the Yahi.

Peter Lassen, whose grant lay along the east bank of the Sacramento River just south of Vina including the mouth of Deer Creek, opened the "Lassen Trail" within two years of the opening of the Oregon Trail. The Lassen Trail followed the Oregon Trail to the Pit River, where it then turned south to a point north of Mt. Lassen. Passing east of Mt. Lassen, the trail proceeded west of Big Meadows in Plumas County, finally reaching the headwaters of Deer Creek and following Deer Creek to Lassen's ranch.

Kroeber (1961) points out that even with the land grants the Yana remained relatively untouched until around 1848. Other California Indians -- most notably those in whose territory missions were established -- had suffered tremendous decimation through violence and disease by 1848, yet the Yana managed to survive due to their remoteness from the centers of the Spanish and Mexican regimes.

The discovery of gold in the California foothills was

disastrous to northern California Indians and ultimately spelled an end to the existence of the Yana nation. As Kroeber notes (1961:42):

> ...what had been a trickle of new immigration became a stream pouring down the western face of the Sierra....The...documented period of Yana history began when old and discontinuous trails to oak flats, along creeks, or over low divides, became united into prospector's trails....

As early as 1850, a clash between the Yahi Indians and settlers was reported in the Sacramento Daily Transcript (April 5, 1850 from Kroeber 1961:58):

> We have been informed by a gentleman from Deer Creek, that one day last week, some twelve men,... attacked a party of Indians whom they accused of stealing animals, and killed four or five men and one squaw. The Indians...gained a stronghold in a rocky part of the mountain, where the Indians attacked them furiously, wounding...two of the whites....The siege lasted two days, during which the Indians lost seventeen men and one squaw.... A party of two hundred was organizing at Deer Creek, and was expecting to start in pursuit last Thursday morning.

The resistance to the new Anglo-American intruders was fierce, and the Yana put up such a fight that they became one of the most hated groups in northern California.

In 1851, a pioneer by the name of Pentz was responsible for the hanging of a "belligerent" Yahi on Concow Creek. Pentz led a mass murder of twenty-five Indians in 1853 for their "crime" of stealing a cow. By 1857 the Yana began to fight back through vicious raiding. Continuously through 1857, 1858, 1859, and the early sixties, the Yana would raid for stock. White posses would pursue, but because of Yana familiarity with the many valleys and caves in the area, the Yana were able to hide successfully.

By 1859 public uproar over the situation forced the establishment of a reservation named "Nome Lackee." Kroeber (1961:63) writes:

> Small and not-so-small groups of Indians were rounded up at gun-point and herded there, a hundred and eighty-one Southern Yana being the largest number in a single forced migration of which there is no record. Nome Lackee was abandoned in 1861...since all the Indians were either dead or had escaped.
>
> The Southern Yana, much depleted even before the removals of 1859, did not survive after that time as a people.

At this time a $3000 purse was collected and offered for the extermination of the remaining Yana (Hutchinson 1948:57). Two prominent settlers, R.A. Anderson and Hiram Good, were involved in further warfare, kidnapping and murder of the Yahi during the early 1860's, while the Yahi continued raiding, kidnapping and murder.

At the insistence of the public and the northern district office of Indian Affairs, a new plan was instituted in 1863 for the removal of the Yahi Indians to a reservation. A poorly-laid plan was carried out but was so badly executed that, as Kroeber notes (1961:73): "...not a single Yahi was taken. The Yahi remained snugly and, for the moment, safely in their sheltered villages in Deer Creek Canyon and on Mill Creek...." (1961:73).

In 1864, two white women were murdered, and for the settlers, this was the last straw. Within five months vigilante groups massacred nearly all the remaining Yana, including peaceful employees of White ranchers. As Kroeber notes (1961:76):

> The guards stole and sometimes literally tore children and half-grown girls from the arms of their white friends or employers....three Yana men were murdered out of hand while at work in a hay field belonging to a rancher who regularly employed them....

This effected the extermination of all the Yana except for the Yahi. "By 1856 the Northern, Central, and Southern Yana were eliminated from the struggle; only the Yahi, Ishi's tribelet, remained" (Kroeber 1961:57). Anderson and Good proceeded to flush out small groups of the Yahi between 1864 and 1868. In 1868 a massacre in a cave near Dye Creek claimed thirty more Yahi, and the settlers believed that every Yahi had been exterminated (Hutchinson 1948, Kroeber 1961).

Around 1871, the few remaining Yahi, under the leadership of Ishi, retreated deep into the hills, effecting a concealment that was to remain until 1884 (Kroeber 1961:98). Hutchinson reports that in 1878 two Yahi squaws, however, were captured by a cowboy named Rafe Johnson.

Kroeber (1961) and Hutchinson (1948) both report small incidents of thievery and various reported spottings of "wild Indians" in the area from about 1884 to 1908. In 1908, two surveyors, Alf Lafferty and Ed Duensing stumbled into the last remaining Yahi camp. When the men returned the following morning, none of the four residents of the camp were to be found.

From 1908 to 1911, Hutchinson and Kroeber both report that three of the four remaining Yahi died, leaving only Ishi, who wandered into Mr. Openshaw's corral in Oroville in August of 1911. After a series of ordeals with the Sheriff, Ishi was delivered into the protective custody of the University of California. Under the University's protection, Ishi provided a wealth of ethnographic information until his death in 1916.

WINTUN

Introduction. At the time of Euroamerican contact, most of the western side of the Sacramento Valley north of about Suisun Bay was inhabited by Wintun-speaking people. The Wintun-speakers were of Penutian affiliation, a language family which comprised a large proportion of the many diverse cultures inhabiting California. The major divisions among the Sacramento Valley Wintun are based on dialect and geographic distribution, and include the following: the Southern Wintun or Patwin, whose lands are far to the south of the Inventory Area in the southern portion of what is now Glenn County and southward into Colusa and Yolo Counties; the Central Wintun, or Nomlaki, whose territory extended from mid-Glenn County north to about Cottonwood Creek in Tehama County; and the Northern Wintun, or Wintu, whose lands were bounded to the south by Nomlaki territory, extending westward to the South Fork of the Trinity River (but excluding Chimariko territory), northward along the Sacramento and McCloud Rivers north of Redding, and eastward to about Cow Creek, Little Cow Creek, and the Pit River. These three major divisions are of

course significant with regard to past socio-political units and group identities; however, these divisions and particularly the numerous Wintun subdivisions are less significant in terms of basic economic orientation, some aspects of settlement pattern and land use, and material culture.

Wintun speakers included within the Inventory Area are the northernmost Nomlaki and most of the Wintu. All the Patwin lands are excluded from the study area. Aboriginal land holdings in this region correspond with the following BLM planning units: Trinity 03-04; Shasta 03-06; Clear Creek 03-05; and Yolla Bolly 03-09.

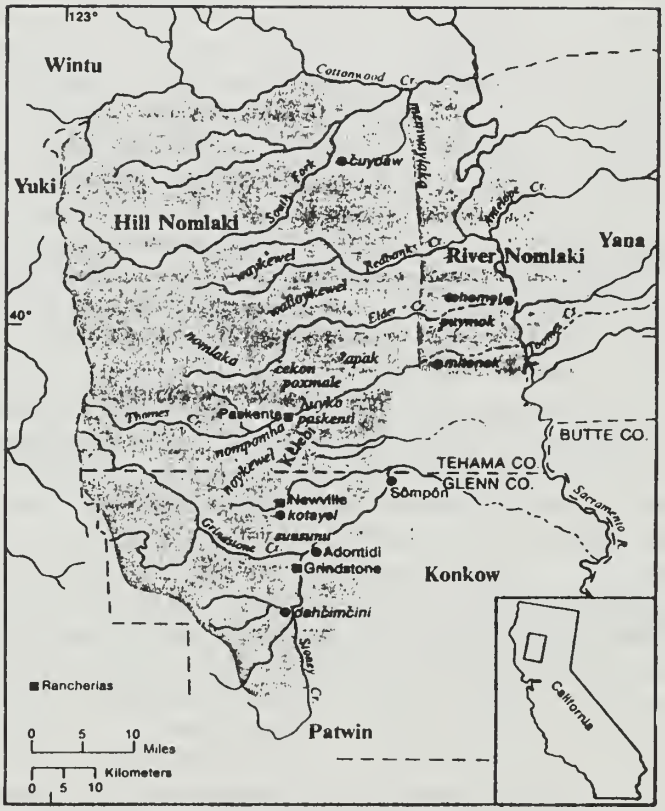
Considerable ethnographic research has been conducted in regard to the Wintun Indians, with the primary sources being DuBois (1935), Kroeber (1925), Powers (1877), Merriam (1957), Lapena (1978) and Goldschmidt (1951, 1978).

Territory. The Wintu inhabited three broad areas within this large tract: the Pit-McCloud drainage; the upper Sacramento drainage; and the upper Trinity drainage (DuBois 1935:1). They have been further subdivided into nine sub-areas: Dau-nom, settling in the Bald Hills region near the confluence of Cottonwood Creek and the Sacramento River; Nomtipon, in the Upper Sacramento region along the Sacramento River near the Shasta-Tehama County line; Winimen, in the McCloud drainage area; Dau-pom, in the Stillwater Creek area; Elpom, in the region of Keswick; Klabalpom in French Gulch; Nomsus along the upper Trinity River of this region; Hayfork Wintu in the area around Hayfork and the South Fork of the Trinity River; and Waimuk, in the Upper McCloud River Valley (DuBois 1935:6-9) (see Map 6).

Among the Nomlaki there were two major divisions based upon linguistic and geographic affiliation. The Hill Nomlaki inhabited territory to the west of the Sacramento River extending to the summit of the Coast Range, while the River Nomlaki settled primarily in the Sacramento River valley in the region that is now central Tehama County (see Map 7). These two groups have been even further subdivided according to slight dialect variations which in turn have been linked with a number of creek drainages inhabited by the Nomlaki, but these are unrelated to our purposes (see Goldschmidt 1978:341 for further discussion regarding these minor variations and divisions).

Map 6

Tribal territory of the Wintu
(Heizer 1978:324)



Map 7

Tribal territory of the Nomlaki
(from Heizer 1978:341)

Population. Kroeber (1925:356) suggests a population for all the Wintun of about 12,000, but this figure, which is corroborated by Heizer and Whipple (1951:71), includes the Patwin, which is the southern group not included in the Inventory Area. Through analysis of several sources, Lapena (1978:325) estimates a total Wintun population figure of 14,250. For the Nomlaki alone, Goldschmidt (1978:341) suggests a population at contact of about 2,000 individuals. Pre-contact population estimates are extremely difficult to determine, as Lapena (1978) notes, due to the severe effects of the malaria epidemic of 1830-1833, which Cook estimates to have had a mortality rate of 75 percent for the Indians throughout northern California. Baumhoff (1963) does not present an estimate for the Wintun.

Language. The Wintun-speakers are of Penutian affiliation. The dialect variations of the Wintu group correspond with the territorial subdivisions listed above. The Nomlaki dialects of No'mlaka and Pui'mak correspond respectively to the territorial subdivision of Hill and River Nomlaki listed above. As noted above, the Hill and River are further subdivided into six groups, of which only three are of significance to this discussion. These are the Damak of the Red Banks Creek area, the Olwenem of the Thomes Creek area, and the Tehemet of the Elder Creek area (Goldschmidt 1951).

Subsistence and economy. Locally available vegetal resources included the acorn, which was a major staple of both the Wintu and Nomlaki Indians. Gathered from the black, blue, scrub, live and valley oaks, acorns were often shelled and stored for subsequent grinding in a basketry hopper with a pestle. The flour was used to prepare soup or mush. Other vegetal resources included grass seeds, tubers, some fungi, other nuts, and berries (DuBois 1935; Goldschmidt 1951).

Meat supplemented the diet, with deer, Brown Bear, Grizzly Bear, small game, and quail being hunted by individuals or in groups. Deer were often hunted by stalking with antler decoys, then shooting with bow and arrow. When hunted in groups, deer were usually driven into pits or snares. Bear was hunted by chasing the bear until it tired, then killing it with arrows or short thrusting spears. Quail were caught in nets, and small game such as gophers, rodents and squirrels were caught by hand or hit with clubs (DuBois 1935, Kroeber 1925).

Additional foodstuffs were provided by fishing for

salmon, trout and suckers. Available in abundance in the Sacramento River, fish were most often taken in underwater entrapments known as salmon "houses" (DuBois 1935).

There is little evidence that extensive trading was carried on with neighboring groups, although the Chimariko Indians obtained obsidian knives and arrowheads through trade with the Wintun and money (dentalia, beads, shells) came from the Pomo Indians to the west (Dixon 1910:300).

A sexual division of labor was practiced, with women participating in gathering activities and men in hunting. DuBois (1935:24) reports that the work was "...fairly equally distributed between the sexes...," but that "both male and female informants felt that women used to do more work than men." Young boys were taught to hunt, but were prohibited from touching the first kill of any animal. If a man's wife were menstruating or pregnant, he was required to observe certain hunting restrictions (Goldschmidt 1978: 347).

Technology. The Wintu and Nomlaki manufactured a variety of implements for their use and for limited trade, as noted above. Several varieties of stone were locally available and utilized by the Wintu and Nomlaki, including mottled chert available in stream beds, pink chert or flint from Yolla Bolly Mountain, and obsidian from the region of Mount Shasta. Edwards (1970) notes that the red varieties of these stones were considered to be supernaturally poisonous, and were often preferred in the manufacture of knives, spear points, and arrow points.

The bow and arrow were used by these groups, with bows being fashioned of yew wood and arrows made of reed or pithy wood. Clubs were made of manzanita or oak wood, while digging sticks were crudely fashioned of hardwood, three to four feet long and sharpened at both ends.

Basketry was highly developed (DuBois 1935) and was produced exclusively by women (Goldschmidt 1951). "The Nomlaki typically used the three-rod coil method...(and) the Wintu were on the border between areas employing the coiling and twining techniques" (Edwards 1970:14). Material used in basket production included pine root, willow, hazel, grapevine, Xerophyllum grass, Woodwardia fern, Maidenhair fern and porcupine quills. Designs were original, and repetition or convention was not highly valued in Wintu basketry, with primary emphasis being placed on creativity (DuBois 1935:131-7).

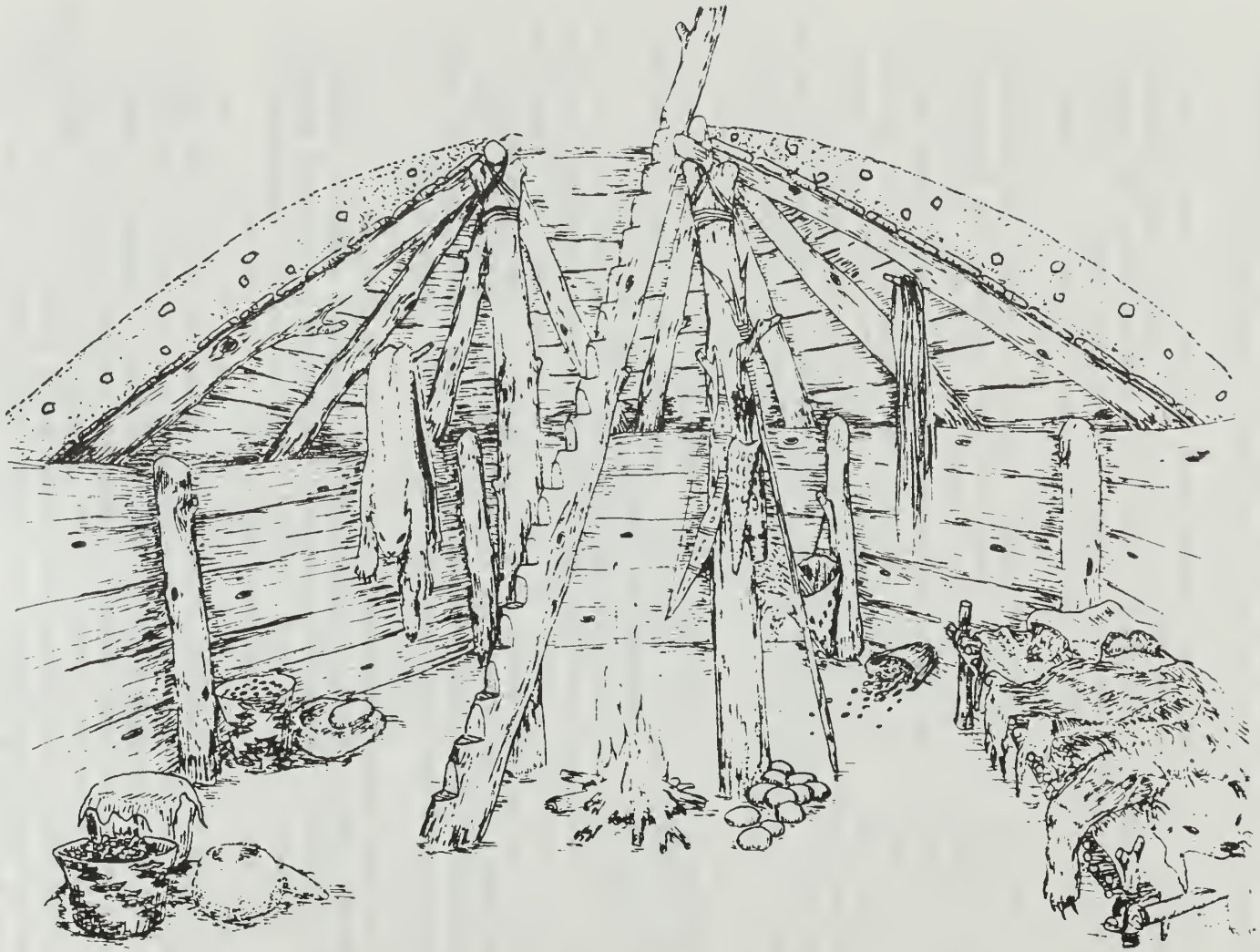


FIGURE 5. Wintu earth-lodge, section view of hypothetical reconstruction.

House structures were of a conical shape of bark and evergreen boughs, banked on the outside with earth. Also constructed were earth lodges and semi-subterranean dance houses, constructed with center posts which supported a roof of brush, pine needles and earth (DuBois 1935, Morgan 1877). Edwards (1970:11) notes that a typical dance house was from 20 to 40 feet in diameter and about four feet deep, with a fire pit in the center. Two entrances were used with a main door facing east and a rear door facing west.

Clothing included skirts of doe-skin or shredded maple bark for the women, and nothing for the men. Decoration included shell pendants worn as earrings, and nose pieces were fashioned of shell or bone. Other items of clothing included capes, belts, hats, headbands and leggings. Moccasins were made of buckskin and worn only for long-distance walking or for protection in winter (DuBois 1935: 120-1).

Socio-political organization. The basic, face-to-face interaction group among the Wintun was the nuclear family. However, the minimal socio-political unit was the village, or tribelet, as described by Kroeber (1932). Among most of the Wintu groups located within the Inventory Area, villages were usually situated along flats or ridges adjacent to major streams, and usually included anywhere from five to fifteen semi-subterranean bark houses as well as a larger earth lodge (DuBois 1935). Among the Nomlaki, on the other hand, villages were similarly located, but were composed of brush shelters arranged about and facing a chief's house. A chief's house, in turn, was the center for many group activities, including gambling, smoking, story-telling and dancing.

An hereditary chieftainship existed among both the Nomlaki and the Wintu and was based not only upon primogeniture through the male line but also on the ability of the individual to maintain social pre-eminence through organizational talents and the accumulation of wealth. The primary duties of a chief were to lead rather than to rule, including giving advice, settling disputes and redistributing food resources, the last of particular significance in terms of maintaining stable and equal food supplies throughout the village over long periods of time. As such, the office of the chief can be seen as an important feature of village economic life. In summary, the economic cooperation effected through the chief's office served as

the focal point for the social and political organization of the clusters of nuclear families which constituted a village or tribelet.

A simple system of law defined action to be taken in the event of conflict or dispute. Resolution of such problems included a blood revenge by relatives of a deliberately murdered victim, payments of gifts as atonement for accidental killings and injuries, and return of stolen articles or receiving a beating in cases involving theft (DuBois 1935:35-6).

Marriage was usually monogamous, and post-nuptial residence could be either matrilocal or patrilocal although neolocal residence seems to have prevailed. The levirate and sororate were also practiced (DuBois 1935).

Religion and mythology. A cult known as the Kuksu was practiced in central California during the Protohistoric period, but of all the groups in the Inventory Area, only the Nomlaki were involved in the Kuksu cult. Their involvement is related to their southernmost location in the Inventory Area, thus placing them closer to central California. Kuksu was a widespread socio-religious system, apparently of some significant antiquity (Bean and Vane 1978:665), and was related to male secret societies. The ceremonies of the cult included assemblages at which dances were held featuring cult members disguised as impersonations of spirits. Entry into the cult was achieved through a series of initiations, which varied from group to group. The initiation ceremonies served to instruct novitiates and other members in the specialized knowledge of the cult. As an individual's participation in the cult deepened, so did the specialized knowledge that was imparted to him from the older members of the cult. The purposes for the secret societies of Kuksu were related to the individual groups participating in the cult. Some groups employed the Kuksu as a means of initiating the youth into adulthood, while other Indian groups related cult activities to such things as world renewal, first-fruits rites or curing (ibid.).

Mythology of the Wintu and Nomlaki stands out as unique in form (Kroeber 1925:362). The primary supernatural and creator is Olelbis, who created streams, mountains, acorns, game and so on. A world fire destroyed the original inhabitants of the earth, who were replaced by the existing

human race. "Coyote" seems to represent an antithetical element to Olelbis, but Kroeber notes that the dichotomy is vague.

The Wintu disposed of their dead through burial, and relatives destroyed the property of the deceased (DuBois 1935:64-66). The bodies were flexed for burial, with the elbows inside the knees, hands on the cheeks. Often, the bodies were wrapped in bearskins, and certain personal items, such as bows and arrows, were buried with the deceased.

Within Wintu territory, Lapena (1978:331,334) identifies as sacred places pot holes, oddly shaped rocks, caves, knolls, or seepage holes. Lapena also notes that certain bedrock mortars were often thought to be "charmed," and thus represented sacred places. The Nomlaki held special reverence for natural springs, considering them to be inhabited by either good or evil spirits (Goldschmidt 1978:345).

Ethnohistory. Being located farther south than the other groups within the Inventory Area, the Nomlaki and the Wintu were probably contacted by Europeans as early as 1808, when Alfred Gabriel Moraga was in the region that is now Glenn County. Later, in 1821, the expeditions of Luis Arguello passed directly through Nomlaki territory in what is now Tehama County (Chapman 1921, Goldschmidt 1978, Ordaz 1958).

During this same period (between about 1820 and 1830) the trappers of the Hudson's Bay Company and the American Fur Company were passing through the area. In 1826-1827, Jedediah Strong Smith and Peter Skene Ogden conducted expeditions through Wintu territory, so the Wintu and the Nomlaki were contacted more often than were many other groups located within the Inventory Area (Lapena 1978).

As Edwards (1970) points out, very little historic information is available for some of the Wintu and Nomlaki groups, as they were largely decimated by the malaria epidemic of 1830-1833. Nevertheless the histories of the Wintu and the Nomlaki are apparently sufficiently distinct to justify separate treatment.

The first settler in the Nomlaki region was Robert Thomes, after whom Thomes Creek was named. The Mexican land

grants of 1844 (see Yana ethnohistory) granted to Thomes five square leagues of land south of Elder Creek on the western side of the Sacramento River. Thomes founded the town of Tehama, which is now in Tehama County. The town prospered, thus threatening the continued existence of the Indians.

The major historic theme of the Nomlaki was the establishment of the Nome Lackee Reservation in Tehama County in 1854. Here the Nomlaki "...accepted its mode of life, learned farming and other crafts, and according to accounts of the time, prospered" (Goldschmidt 1978:342). As noted above (see Yana ethnohistory) the Nome Lackee Reservation was abandoned by 1861 "since all the Indians were either dead or had escaped" (Kroeber 1961:63).

Even though the Nomlaki were not nearly as recalcitrant as other groups were in their resistance to White encroachment, the Nomlaki were neighbors to the Yana and Yahi, whose behavior led to the public outcry to remove all Indians from the region. In 1863 a new reservation was planned at Round Valley. This was to effect the removal of the Indians, particularly the Yahi, and to open up more farm land for the settlers (Goldschmidt 1978).

The Nomlaki were not satisfied with reservation life at Round Valley since it was located in Yuki Indian territory and the Yuki were traditional enemies of the Nomlaki. After several conflicts, the Nomlaki retreated to the foothills in western Tehama County, continuing a traditional way of life as late as the 1930's when there remained only three small Indian Rancherias at Grindstone, Newville, and Paskenta (Goldschmidt 1978).

The history of the Wintu includes a series of themes and events separate from that of the Nomlaki. The relations between Whites and Wintu effectively began in 1846, when Pearson B. Reading was granted land in the northern Sacramento Valley (Lapena 1978:324). Just two years earlier, the Mexican land grants in the area had caused problems for the Wintu as "...settlers soon moved into the area, and their cattle and sheep overran the land, thus destroying vital natural foods used by the Wintu" (ibid.). The ensuing gold rush led to further depletion of Wintu resources, leading directly to Indian-White confrontation and a series of massacres (Lapena 1978, Southern 1942, Petersen 1969). One massacre in 1846 resulted in 175 Wintu and Yana deaths. In 1850 100 Wintu were poisoned as guests at a

"friendship feast." In 1851 miners massacred about 300 Wintu in the town of Old Shasta, burning the Wintu council meeting house to the ground.

Petersen (1969) reports that the "Cottonwood Treaty" was reached in 1851, and ratified by Congress in 1852. This treaty provided the Wintu with their own land of 35 square miles (Lapena 1978), and Reading was appointed as the agent for the Wintu. The establishment of Fort Reading, designed to protect Indians and Whites alike, came in 1852. However, there soon followed what has been called the "Wintoon War" of 1858-1859, in which 100 Wintu were killed and 300 were herded to the Mendocino Reservation. Throughout the next decade, "...the Wintu were hunted down, captured, and forcibly marched to the coastal reservations" (Lapena 1978:325).

What few Wintu Indians remained were more or less dispersed due to activities related to copper mining in the 1890's and 1900's, the construction of Shasta Dam from 1938-1970, and a parcelling of land that occurred in 1952 and 1953 (Lapena 1978).

Regarding Wintu populations today, Lapena (1978:325) notes that the Wintu "still maintain an appreciation of their Indian history." He sums up their current situation by noting that Wintu individuals live all over the United States today, while "Shasta County statistics show that the largest number of unemployed, those with substandard housing, and those with the greatest health needs are Indians"(1978:325). In 1973 the Wintu acquired the Toyon Conservation Camp and incorporated a Toyon-Wintu Center, Inc. to work for the needs of the local Indian community (ibid.).

Prehistory

Introduction. During the long interval between about 10,000 B.C. and A.D. 1850, the prehistoric societies of northern California underwent a series of slow but significant changes in subsistence and economic orientation, population densities and distribution, and social organization. The evidence for these changes is to be found in the archaeological record within this part of the State. While that record is far from complete and certainly not unequivocal, the broad outlines of the prehistoric sequence are beginning to emerge as data from particular sites and localities are compared and contrasted.

The objective of this Section is to review northern California prehistory as it relates to the Inventory Area. The discussion will begin with a review of North Coast Range prehistory. Although this province is not included within the present BLM Inventory Area (as noted in Chapter II), the prehistoric record from this region relates in important ways to areas which are included within the Inventory Area. In particular, the North Coast Ranges have been the focus of considerable archaeological attention during the past two decades and, as a result, archaeological syntheses have been produced for this area to which northern Sacramento Valley and Cascade Range sites have been directly linked.

The review of North Coast Range prehistory will be followed by an examination of northern Sacramento Valley prehistory, including work undertaken within the Wintun, Yana, and Northwestern Maidu territories. Lastly, this section of Chapter III will close with an examination of relevant northeastern California and Great Basin prehistory.

The North Coast Range. For present purposes, only the North Coast Range province from about Mendocino County northward will be considered. Systematic research within this general area began in the late 1930's with Harrington's excavations at Borax Lake (Harrington 1948). In 1950, Treganza, Smith and Weymouth undertook archaeological survey and test excavation within Yuki territory in Round Valley, located just north of Ukiah and north of Borax (Clear) Lake (Treganza, Smith and Weymouth 1950). One aspect of the 1950 survey and test excavations was to attempt to link the available ethnographic information with archaeological data by means of the direct

historical approach.

There were several major research objectives associated with this study. On the one hand, the researchers wanted to establish realistic estimates of the size of the aboriginal population within this area. In addition, the researchers were particularly interested in acquiring data relevant to the boundary separating the Yuki from the Wappo. This second objective was in turn guided by at least three hypotheses:

1) Kroeber (1925) had earlier suggested that the Wappo had segmented from the Yuki sometime around 1000-1500 years ago; related to this was

2) the suggestion that the Wappo represented a Yukian group at the time of original occupation of this portion of the North Coast Range, and that subsequent bifurcation of the group had combined with later cultural influence from other areas to produce the cultural and linguistic differences noted ethnographically. The 1950's project was seen as an opportunity to test both of these hypotheses using archaeological data.

3) Lastly, it had been suggested, but not clearly documented, that the Yuki territory extended as far south as Napa Valley in prehistoric times. It was anticipated that the data collected in 1950 could be used to test this hypothesis as well.

Treganza, Smith and Weymouth were unable to answer all of these questions in any finally satisfactory way. However, their approach, in which hypotheses were advanced and tested against the data collected archaeologically, anticipated the kind of methodology which Binford was later to refer to as the "new archaeology" (Binford 1962).

Following publication of the Round Valley survey and excavation data, Clement Meighan undertook a more comprehensive analysis of North Coast Range prehistory. Meighan's objective was to establish a tentative chronology for the North Coast Ranges including Lake, Sonoma, Napa and Mendocino Counties. His data were derived from the excavation of one site within each of these areas and from examination of a number of private archaeological collections.

Beginning with the most recent period of occupation,

Meighan (1955:32 et passim.) defines the Shasta Complex on the basis of fieldwork undertaken and data collected within the Shasta Dam area (Smith and Weymouth 1952), Round Valley (Treganza, Smith and Weymouth 1950), and some data derived from his own fieldwork in Napa County as well as data from Oregon (Strong, Schenck and Steward 1930: Plate 14H). The Complex was considered more typical of, if not largely confined to the northern Sacramento Valley and northern portions of the northern Coast Ranges and Klamath Mountains. Sites were typically located adjacent to stream courses, while subsistence was based on extensive hunting and gathering. The presence of small tanged projectile points indicated use of the bow and arrow, and overall the Complex was believed to date to the period after about A.D. 1600.

The Shasta Complex of the northern Coast Range was believed to be contemporaneous with the Clear Lake Complex, itself defined primarily on the basis of ethnographically collected artifact specimens housed in the University of California Museum of Anthropology. The Complex was intended to represent the terminal complex of the archaeological sequence in the Pomo area and adjacent regions (Meighan 1955: 30) just as the Shasta Complex was believed to represent the immediate forebears of the ethnographic Wintu. While the Clear Lake Complex was believed to be contemporaneous with the more northerly Shasta Complex, each included a large number of distinctive artifact traits (ibid.).

The Mendocino Complex preceded the Shasta/Clear Lake Complexes within the North Coast Ranges, and was originally believed to date to the period between about A.D. 500 and 1000 (Meighan 1955:13, 30-32). The Complex was defined on the basis of excavations undertaken at site CA-MEN-500 as well as materials uncovered during Harrington's excavations at Borax Lake (Harrington 1948). While the Mendocino Complex is most clearly represented within northern Mendocino County (at Round Valley, for example), affinities have been recognized with Borax Lake materials to the south and with some materials to the north. Meighan (ibid.) suggested that the Complex might extend as far north as Humboldt and Trinity Counties.

In 1955, Meighan noted that the only excavated Mendocino Complex site showed marked similarities to the existing Borax Lake sites. In both cases the sites were found on alluvial fans and evidenced considerable leaching of the midden. Moreover, the artifacts were generally similar, with both indicating

hunting and gathering subsistence mode and probable absence of the bow and arrow.

However, while Harrington dated all of his Borax Lake Complex to about 10,000 years ago, Meighan placed his Mendocino complex approximately coeval with the Central Valley's Middle Horizon. How, then, could the Mendocino Complex materials be compared with some of the artifacts from Borax Lake, yet Harrington and Meighan suggest such widely different age estimates? As Meighan later observed (Meighan and Haynes 1970), perhaps because of Harrington's preoccupation with the Folsom-like points at Borax Lake and the early man problem in California generally, he saw the site as entirely ancient and as influenced or visited exclusively by a series of ancient peoples within a relatively short period of time. This, according to Meighan (Meighan and Haynes 1970), tended to obscure dating of the Borax Lake site for a long time, and ultimately led to Meighan's re-examination of the Borax Lake site itself and its artifactual component.

The study undertaken by Meighan and Haynes in 1970 has demonstrated that a Middle Horizon date for the originally defined Mendocino Complex is not inconsistent with an earlier date for a portion of the Borax Lake deposits. The argument proceeds as follows. The Mendocino Complex lacks the older remains of the Borax Lake collection -- e.g., the fluted, Borax Lake, and "long stem" projectile points as well as the crescents. Thus, using the Borax Lake age estimates advanced by Meighan and Haynes on the basis of their re-examination of the site, the Mendocino Complex would have to be more recent than the wide-stem Borax Lake points -- that is, less than 7,000 years old. However, the Mendocino Complex does share eight of its twelve projectile point types with Borax Lake and six point types with the Middle Central California Complex. This Middle Central California affiliation is also supported by the presence of mortars in the Mendocino Complex trait list. If the Middle Central California Complex in turn dates to approximately 1000 B.C. (cf. Ragir 1972), then the Mendocino Complex should date to sometime between about 1000 and 5000 B.C. Meighan's belief is that the true age is somewhere closer to the more recent end of this suggested time span. Therefore, in his 1970 article, Meighan (Meighan and Haynes 1970) revises his original "guess" date for the Mendocino Complex from A.D. 500-1000 to between 1000-5000 B.C. It is still generally accepted, however, that the Mendocino Complex

is a later development of the Borax Lake Complex, an assumption based on a comparison of the artifacts only since the two complexes are not known to occur in stratigraphic relationship to one another.

The Borax Lake Complex precedes the Mendocino Complex within this part of the North Coast Ranges. The Complex was originally defined by Harrington's (1948) work at the Borax Lake site in Lake County. According to Meighan and Haynes (1970) who re-examined the site itself and much of its artifactual component, the Borax Lake site contains three distinct periods or episodes of occupation. The latest period at Borax Lake is typified by concave-based projectile points without fluting, stemmed points, and by some continuation of manos and metates as grinding implements. This period of occupation is believed to have been coeval with the Middle Horizon Central California Complex and has an age of about 3000 to 5000 years, or 1000-3000 B.C. From this terminal occupation at Borax Lake developed the Mendocino Complex described by Meighan (1955) and outlined above.

The middle period or episode of occupation at Borax Lake has an apparent age of from 6000 to 8000 years, or 4000-6000 years B.C. This period represents the major period of occupation of the site and includes the largest portion of the total artifact collection. Typical artifacts include the Borax Lake wide-stem projectile points, some single-flake blades, and probably the manos and metates. Shortly following the publication of Meighan and Haynes' re-study of Borax Lake, the association of similar wide-stem Borax Lake-like points with milling stones was noted in two additional early contexts. In Little Indian Valley, located about nine miles northeast of the Borax Lake site, Orlins (Fredrickson 1974:42) found such an association. Moreover, obsidian flakes from the Little Indian Valley site produced hydration rim measurements comparable to those which Meighan and Haynes recorded for the Borax Lake wide-stem points. The second northern California site for which this association was subsequently documented was located northeast of Redding along Squaw Creek. Here, Clewett (1974) found a similar association and obtained a charcoal-based radiocarbon date of 4580 B.C., thus providing considerable support to the Meighan and Haynes dating of the earliest milling stone occupation of the Borax Lake site itself.

The earliest period of occupation at Borax Lake was

originally thought to date to 10,000 B.C. (Harrington 1948) on the basis of typological inferences drawn from the Borax Lake fluted projectile points and obsidian crescents. In their re-analysis of these materials, Meighan and Haynes (1970: 1215) note that "Neither the geological nor the typological

> evidence is inconsistent with a date of up to 12,000 years ago for the original occupation of the Borax Lake site. Obsidian dating also suggests the reasonablness of such an age..."

The diagnostic artifacts of this earliest period at Borax Lake are, of course, the fluted projectile points and the crescents. The absence of crescents in Clovis and Folsom contexts within the Plains, but the occurrence of such a pairing at other western localities including Lake Mohave, Long Valley Lake, Nevada, and Tulare Lake, California, led Meighan and Haynes to argue that the earliest component at Borax Lake does in fact represent a western variant of the Clovis tradition but represents a time level closer to Folsom culture (see Endnote 1).

Recent work undertaken within the North Coast Range includes a variety of survey and excavation projects and some special studies. However, none of these projects have resulted in significant changes in our understanding of the general sequence of prehistoric events as outlined above. However, some of the existing Complexes have been extended geographically. For example, Borax Lake-like assemblages have been reported for the Redding Area, as already noted. Additionally, both Jackson (1975) and King (1974) have documented the existence of additional Borax Lake materials within the Mendocino National Forest, while Wylie (1976) documents similar materials as far north as Humboldt County within the Six Rivers National Forest.

Some special studies have also been undertaken within the North Coast Ranges and adjacent parts of the Klamath Mountains. The study of Late Period settlement of the Middle Klamath River by Chartkoff and Chartkoff (1975) has demonstrated the importance of environmental factors in regulating site placement and population density within northwestern California generally. In this study, topographic variables, particularly gradient, were found to serve as negative criteria in limiting the possibilities of site location, while differential access to anadromous fish was found to function positively

in favoring site placement and high population densities. This finding supports Baumhoff's earlier (1963) suggestion that northwestern California aboriginal population levels could be accounted for largely by available fish resources alone.

In 1974 Fredrickson published a review of North Coast Range prehistory which emphasized the inherent complexity of Archaic and later cultures within Central California and the North Coast Range. According to Fredrickson, previous researchers have tended to use beads and other ornamental artifact categories in establishing regional and local chronologies and sequences. While such a practice admittedly offers a useful method for cross-dating archaeological sites throughout much of California and the Great Basin, the method may have had the tendency of equating exchange or trade networks (represented by the distribution of ornamental objects) with areas of cultural identity (which are not necessarily represented by the distribution of such items). Thus, Fredrickson advocates shifting the basis for establishing spatial and temporal relationships from beads and ornamental objects to other items of culture more intimately linked to basic subsistence patterns. The consequence, according to Fredrickson, is a view of local prehistoric sequences in which previously simplistic unilineal sequences (e.g., the Lillard, Heizer and Fenenga 1939 chronology) give way to evidence of greate pattern diversity within prehistoric California.

In his shift to an explicitly ecological framework, Fredrickson proposes a series of periods or stages derived from Meighan's (1959) concept of the California Archaic, an adaptive pattern characterized by a hunting and gathering subsistence. Fredrickson's proposed three-phase Archaic Period was preceded by a Paleo-Indian Period represented by the early assemblage at Borax Lake (described above) and followed by an Emergent Period which is otherwise known as the Late Period in California prehistory.

The earliest Archaic phase, labeled the Lower Archaic, is linked temporally to the Altithermal, a time of high temperature and low precipitation. The cultures of this time period may have emphasized the collection and processing of seeds, with hunting being of less significance except within the Klamath Mountains near Redding.

The Middle Archaic witnessed the introduction of the mortar and pestle and presumably the acorn complex as well. Fredrickson sees this time period as being a transitional phase associated with the end of the Altithermal and the beginning of the Medithermal. Hunting probably became more important among most groups during this period, while the introduction of the mortar and pestle may have been associated with population intrusion into central and northern California.

The Upper Archaic was characterized by ever-increasing socio-political complexity, appearance of status distinctions based upon relative wealth, and the emergence of group-oriented religious activities and increased complexity of exchange systems. While sedentary life appears to have become fully established in many regions, groups within adjacent or nearby territories tended to become increasingly interdependent.

The final or terminal stage in California prehistory presented by Fredrickson is the Emergent. This stage or period is equivalent to others' use of the Late Period, and Fredrickson's description of the period is as follows (Fredrickson 1974:48-49):

> ...I propose the concept of the Emergent as a non-agricultural equivalent to the Formative. Evidence continues to accumulate that Californians modified the environment to increase its natural productivity..., that food storage and exchange relations served to equalize the distribution of resources unequally distributed in time and space..., that complex forms of social, religious, and occupational organization were emerging..., and that ranking societies and possibly chiefdoms were developing in several regions of the state.

Fredrickson feels that the unilineal sequence implicit within the original Lillard, Heizer and Fenenga (1939) sequence does not do justice to the available data for California prehistory, nor does such a sequence encourage attempts to explain the cultural change which was obviously occurring throughout the State. Culture change, according to Fredrickson, did not occur uniformly within the State, but rather occurred at different times within different regions and for different reasons.

The evolutionary scheme proposed by Fredrickson has met with some criticisms, however. King (1974:233-34), for example, feels that Fredrickson's proposed shift from ornamental to techno-environmental variables offers little theoretical value, and that the resultant periods proposed by Fredrickson are not really significantly different than the sequence proposed by Lillard, Heizer and Fenenga in 1939. Moreover, King feels that Fredrickson's periods or phases represent nothing more than clusters of attributes and that the periods so defined probably "did not exist in the minds of the occupants." This latter statement by King is interesting and the temptation here is to follow King's assertion through to its logical conclusion. This is not, however, the context in which to pursue an *in extenso* argument against the use of emic, normative stances in archaeology, since this has already been undertaken generally (cf. Binford 1965; Bayard 1969; Cowgill 1970; Harris 1968) and with respect to some of King's own work in particular (cf. Kautz 1972).

Bert Gerow's (1974:240) major objection to Fredrickson's proposal is that Fredrickson has failed to provide sufficient definitive data for his various periods and aspects. Gerow notes that the 1939 chronology and Beardsley's later (1948; 1954) proposed sequences at least provided detailed artifact lists which constituted statements of the necessary and sufficient conditions for including particular site components into the various sequences. According to Gerow, this aspect is inadequately attended to in Fredrickson's present publication.

These criticisms aside, however, if Fredrickson's synthesis is accepted as a working hypothesis, it becomes possible to relate the archaeology of the North Coast Ranges and central California to developments in southern California, the Great Basin and elsewhere. In this sense, Fredrickson's synthesis provides a very useful model for on-going archaeological research within the region and northern California generally.

Northcentral California. Northcentral California is here intended to include portions of the northern Sacramento Valley, parts of the southeastern Klamath Mountains, and portions of the southern Cascade Range. The principal occupants during ethnographic times were the Wintun and Yana.

Systematic archaeological research within the northernmost portion of this large region was initiated northeast of Redding by Sinclair at Potter Creek Cave (Sinclair 1904) and by Merriam at Samuel Cave (Merriam 1906). Both of these researchers document the results of excavations and artifact cataloguing at moderate-sized cave sites. However, neither report is precise regarding the degree to which formal archaeological controls were exercized during excavation and cataloguing, although apparently all artifactual specimens were labeled with respect to their vertical and horizontal positions within the caves' natural strata. Both Sinclair and Merriam were apparently most interested in identifying and explaining a number of broken, splintered and polished bone specimens which they recovered during excavation. Some of these bones possessed notches and perforations which were suspected although not unequivocably demonstrated as being caused by human action (Merriam 1906:223-34).

Following Sinclair's and Merriam's work, little if any professional archaeological research was undertaken within this area until the early 1940's. In 1941 and 1942, Smith and Weymouth undertook archaeological survey and salvage excavations within the Shasta Dam basin. This project, which involved portions of the Sacramento River and major tributary streams such as the Pit and McCloud Rivers and Squaw Creek, was responsible for inundation of a large number of potentially very important sites. However, the McCloud River appeared to represent the richest area, at least in terms of the number of sites to be inundated: a total of 31 of the 37 prehistoric sites recorded for the Shasta Dam project were found along its banks.

Two successive field seasons, in 1941 and 1942, were spent site surveying and excavating following removal of vegetation up to the high water mark. Smith and Weymouth distinguished three major types of sites on the basis of site location: Riverside, Terrace, and Hill or Ridge sites. The artifactual assemblages recovered during excavation showed marked resemblances to the material culture recorded ethnographically for the northeastern subgroups of the Wintu Indians. Smith and Weymouth (1952) interpreted this resemblance as evidence of a fairly short chronology or a fairly static culture, or both. In addition, similarities in material items noted between the Wintu and Maidu areas were interpreted as representing environmental effects and aspects of ecological

adjustment rather than intensive trade or other influences flowing between the two areas. Lastly, Smith and Weymouth concluded that the abundance of sites located along the McCloud River might be due to displacement of Wintu groups into this area following initial intrusion of Euroamericans into the area.

The materials recovered during the Shasta Dam excavations, as well as subsequent survey and excavation within Yuki territory (Treganza, Smith and Weymouth 1950) and central Mendocino County (Meighan 1955), provided the basis for initial definition of the Shasta Complex. Meighan (1955:32-33, Fig. 9) describes the Shasta Complex as characteristic of the more northern portions of the North Coast Range and of the north end of the Sacramento Valley, although the Complex is identified within the Coast Ranges as far south as Willits and may have extended northward into Oregon. Aboriginal village sites are closely associated with stream courses and often identified by ashy midden mounds up to 5 meters in depth associated with varying numbers and sizes of house pit depressions. Hunting and gathering is clearly the economic orientation, with acorns being prepared in hopper mortars. The characteristic projectile point type is a small stemmed form with long tangs. Spire-lopped Olivella beads and Haliotis pendants have been recovered as grave goods, while a few examples of clamshell disc beads have been recorded for Coast Range sites within close proximity to the ethnographic Pomo. Meighan (1955) suggested a date of post-1600 A.D. for the Complex, a conclusion which has not changed significantly on the basis of more recent excavations and additional radiocarbon dates.

While the excavations undertaken by Smith and Weymouth did not yield evidence of cultures predating the Shasta Complex, the authors did not rule out the possibility of much older materials within the region. The current evidence for earlier Complexes within this area has already been noted in the discussion of North Coast Range prehistory, and will be addressed below within the context of the current review.

At about the same time that Smith and Weymouth published their report for the Shasta Dam project, A.E. Treganza initiated additional archaeological survey and excavation within several portions of northcentral California. In 1951-52, Treganza headed an archaeological survey of seven reservoir areas in central and northern California. This survey resulted in

recording numerous prehistoric and historic sites within the proposed Oroville Lake and Lost Creek Reservoir areas within Butte County, at the Lewiston and Trinity Dam project sites within Trinity County, and the Redbank Reservoir project site within Tehama County.

Excavations undertaken in 1953 at site CA-TEH-58 within the Redbank Reservoir area near Red Bluff (Treganza 1954) yielded a rich and important collection of artifactual material from a portion of the aboriginal cemetary. The excavations revealed 77 burials rich in grave offerings, including glass trade beads and a variety of additional ornamental objects. Blending available ethnographic with archaeological data in the mode of the direct historic approach, Treganza concluded that the site deposit was restricted to the protohistoric period. The artifacts appeared closely linked with items reported for the Shasta Dam area and labeled the Shasta Complex.

Following his excavations at the proposed Redbank Reservoir near Red Bluff, Treganza turned his attention to the test excavation of sites which he had recorded within the Trinity Reservoir area. Here more than 120 prehistoric sites were to be inundated by the proposed project along Trinity River and its major tributaries. Treganza summarized prehistoric information retrieved from his salvage excavations within this area in two reports published in 1958 and 1959. His primary conclusion in both reports was that the area was inhabited fairly late in time by groups whose cultures had undergone little culture change since their earliest recorded occupation within the region. Again, the reports emphasized the correspondence between the archaeological data and the ethnographically recorded Wintu culture. Based on Meighan's earlier (1955) summary of North Coast Range prehistory and the work of Smith and Weymouth (1952) within the Shasta Dam area, Treganza again assigned most of his Trinity Reservoir materials to the Shasta Complex.

However, Treganza did note that the Shasta Complex should probably be broken up into a number of separate phases. He further suggested that the several identifiable phases might logically be linked to local variability in subsistence patterns which in turn were influenced by variations in micro-environmental characteristics. This theme was advanced further in his report on archaeological survey and excavation within

the Whiskeytown Dam project area (Treganza and Heickson 1960).

In 1958 Treganza also initiated archaeological reconnaissance along Clear Creek and its tributaries within the Whiskeytown National Recreation Area. He recorded 35 aboriginal sites and initiated excavation at three of these (Treganza and Heicksen 1960). He had apparently hoped to be able to fit the Whiskeytown cultural materials neatly into the existing Shasta Complex and/or help clarify the elements within that Complex as then defined. But he appears to have been frustrated on both counts, and eventually abandoned excavation in this area. Treganza's work in the Redding area was followed by excavations at site SHA-207, a large fishing station located adjacent to the Sacramento River (Dotta and Hullinger 1964), and at SHA-237, a large midden also located near the Sacramento River between Redding and Anderson (Dotta 1964). Both sites excavated by Dotta were occupied in very late prehistoric times, with both containing significant quantities of historic items.

Treganza's experience at the Whiskeytown sites eventually led him to reassess the notion of complete homogeneity within the Shasta Complex. He felt that the Complex should be considered as consisting of at least two separate elements. One of these elements was subsistence which influenced settlement pattern, site distribution and a variety of other aspects of culture. The other element was described as the "socio-political pattern" which was considered capable of diffusing freely within a relatively large and diverse geographic environment. In this way, Treganza had hoped to reconcile an apparent contradiction which he felt existed between the archaeological and the ethnographic data: On the one hand his reconnaissance data documented local diversity in settlement patterns within this region: on the other hand, the available ethnographic information seemed to represent the Wintu culture as a homogeneous socio-political entity.

Upon completion of the Whiskeytcwn Dam and filling of the lake, 23 of the 35 recorded sites were inundated, thereby severely impeding the process of fully understanding the prehistory of the lower Clear Creek drainage. However, in 1969 archaeologists returned to Whiskeytown to survey approximately 10 miles of Clear Creek below Whiskeytown Dam (Johnson 1970). Six prehistoric sites originally recorded by Treganza were relocated, while one new aboriginal site

along lower Clear Creek and five new Euroamerican sites were recorded. In 1970 and 1971, site SHA-177, located on Paige Boulder Creek at the National Environmental Education Camp about one mile south of Whiskeytown Dam, was test excavated (Johnson and Skjelstad 1974). The prehistoric complex noted for the site represents prehistoric Wintu Indian culture of a few hundred years ago. Most recently within this area, Jensen (1977) undertook test excavations at site CA-SHA-543 located about six miles northeast of the town of French Gulch on the west bank of the East Fork of Clear Creek. Jensen's findings were similar to those of Johnson and Skjelstad (1974) and much previous work in that the prehistoric complex noted for SHA-543 appears to represent prehistoric Wintu Indian culture of 3 - 400 years ago.

In addition to the excavations and surveys noted above, an archaeological reconnaissance of selected rugged back-country areas designated by the Whiskeytown National Recreation Area for development and expanded public recreational use has recently been completed by Johnson (1976). These areas lie in the mountains west and south of Whiskeytown Lake, and have yielded some evidence of historic and prehistoric cultural resources which remain to be evaluated.

Until about 1970 it was generally believed that the Redding area possessed relatively little time depth and that the area's prehistory was characterized exclusively by settlements of the historic Wintu Indians and their immediate prehistoric ancestors. With the possible exception of site CA-SHA-203 reported by Treganza and Heickson (1960) within the Whiskeytown Dam area, all the remaining excavated sites within the Trinity Dam area, Shasta Dam area, and along Clear Creek and its major tributaries, apparently fall easily within the definition of the late prehistoric Shasta Complex as outlined above. However, by 1970 this view of local prehistory began to change dramatically.

In 1970 Payen (1970) reported on excavations which involved a re-examination of Potter Creek Cave which Sinclair had excavated in the early 1900's. Payen's report describes a complete atlatl; comparisons with similar finds in areas throughout California and the Great Basin led Payen to propose a date for the associated assemblage of between 1000 B.C. and A.D. 300, considerably older than the oldest estimate for the earliest Shasta Complex.

Some additional evidence for pre-Shasta Complex cultures has been obtained from some millingstone-containing sites within the Redding, French Gulch, and Lower Pit River areas. In February of 1968, a workshop on California archaeology was held at Davis under the auspices of the newly-created Center for Archaeological Research. A number of archaeologists working in various areas of northern and central California shared information about research within their respective regions. Among the topics discussed was the use of obsidian hydration measurements in estimating site age. Michaels had recently published his work with obsidian hydration dating (Michaels 1965) and Ritter's use of the technique for some of the materials from Oroville and American River sites provided additional comparative data. This encouraged James Dotta to submit to C.A.R.D. a number of samples of obsidian from three millingstone sites located within Shasta County (sites CA-SHA-42, -287, and -288). Surface samples from SHA-288 possessed hydration rims roughly equivalent to 3175 and 3475 years B.P. (utilizing Clark's earlier (1964) correlation of hydration thickness with age). The SHA-42 samples, which consisted of two leaf-shaped uniface points from the lower levels of the site, possessed hydration thickness as suggesting dates of 3475 and 3975 B.P. The samples from SHA-287 consisted of eight flakes from different levels of two separate units, and produced age estimates of from 1225 to 3250 B.P. Two additional readings obtained from flakes from the lowest levels of site SHA-287 were 3175 and 3250 B.P.

Dotta concluded that the evidence obtained from the obsidian hydration measurements suggests the existence of a widespread mano/metate culture in the upper Sacramento Valley which existed between 2000 and 4000 years B.P. This conclusion, in turn, supports the hypoghesis advanced by Chartkoff, Miller and Johnson (n.d.) that the early occupation of Northern California focused not on the valley floor but on the foothill zones and that manos and metates were the most abundant plant food processing implements during this earlier period of occupation.

In the same year in which Payen reported on his Potter Creek Cave discovery, Ed Clewett initiated excavations at site CA-SHA-475 located northeast of the city of Redding in the Shasta-Trinity National Forest. The site contains more than 2 meters of cultural deposit from which several thousand artifacts have been removed since the initial excavations

were begun. On the basis of several radiocarbon assays, it has been determined that the multi-component site has been occupied for more than 6000 years, with the overall sequence being linked with the prehistoric sequence established for the North Coast Range.

On the basis of stratified artifact assemblages, Clewett has identified five phases of projectile points and three major cultural components. The earliest component at Squaw Creek (Component I) includes the first two phases of the projectile point sequence, which in turn includes broad-stem specimens similar to those recovered at Borax Lake. Clewett interprets Component I as representing an early Archaic adaptation stressing hunting with stone-tipped thrusting spears and atlatls and the collecting of wild grass seeds for processing with manos and metates. The Component produced a radiocarbon date on charcoal of 6530 years B.P.

Shortly after this date, changes began to take place at the site which culminated in the second major component. Component II, according to Clewett, "is typified by altalts, a throwing stick and spear-dart combination, and an intensification of seed gathering as indicated by a striking increase in the number of milling stones found" (Clewett 1974:1). Clewett also suggests an increase in population based on the increase in the total number of all types of artifacts recovered within the middle levels of the site. A charcoal-based radiocarbon date of 4,000 years ago was secured at the 4.0-foot level of the midden, a point which Clewett suggests falls in the middle of the occupation associated with Component II. A variety of large square- and tapering-stem projectile points were associated with this Component.

Component III is apparently restricted to the top two levels of midden and has been linked directly with the late prehistoric Shasta Complex. Bows and arrows are inferred, while milling stones decreased dramatically in favor of hopper mortars and pestles. In addition, the total number of artifacts drops significantly during Component III times, which Clewett interprets as a shift in ecological adaptation away from the Squaw Creek drainage resources towards the larger river systems of the upper Sacramento Valley due to an increasing reliance on anadromous fishery runs.

Site SHA-475 appears to have been occupied almost

continuously for the past 7000 years, contains datable organic material and a sophisticated and well-preserved inventory of artifacts. The site is clearly one of the most important multi-component sites currently recorded within northern California. Clewett's hypotheses concerning the relation of this site to problems of northern California prehistory include the following (Clewett 1974:1):

1) Archaic culture within northern California appears to have arrived fully developed in the southeastern Klamath Mountains at about 5000 B.C.;

2) Archaic culture within northern California was predated by a more mobile, presumably hunting adaptation;

3) The Lower Archaic Borax Lake Pattern may have originated as a northern Sacramento Valley and western coastal hill/mountain adaptation emphasizing hunting with atlatls and plant food milling using manos and milling stones;

4) Archaic culture within northern California underwent a slow evolutionary change until about A.D. 500 and maintained contacts with the Great Basin throughout this period;

5) A fairly distinct change occurred toward the end of the northern California Archaic with many of the mountain sites being abandoned or used only temporarily in favor of a more stable and intensive exploitation of valley/rivering environments.

This general sequence was earlier predicted by a model of northern California prehistory constructed by Chartkoff, Miller and Johnson (n.d.).

In addition to the sequence of prehistoric events outlined above, there is some evidence for a much earlier archaeological complex within the Redding area and elsewhere within northern California. The complex is very poorly documented, although at this time it appears to be characterized by meta-volcanic flake and core tools, but lacks projectile points, seed grinding implements, obsidian, chert detritus, bone and shell remains and an easily identifiable midden soil. While temporal and cultural placement of these materials has not been accomplished, it is tempting to consider these few

remains (Sundahl 1976) as manifestations of a pre-projectile point stage of cultural evolution in California (see Endnote 2).

Thus far in this discussion of northcentral California prehistory, attention has focused on archaeological surveys and excavations undertaken primarily within the Redding area and along the Clear Creek drainage west of Redding. This work has been closely correlated with the prehistoric sequence established within the North Coast Ranges and with the ethnographic information available for the Wintu. However, while archaeological investigations within the areas south and west of Red Bluff and lying within Nomlaki territory have been somewhat less intensive, research has recently progressed to the point that a preliminary prehistoric chronology has at least been attempted (Edwards 1970).

In 1948 David Fredrickson and Al Mohr surveyed the below gross pool area of the proposed Black Butte Reservoir, and recorded a total of 26 sites along Stony Creek. These were the first sites recorded by the Berkeley Archaeological Survey in Glenn and Tehama Counties (Mohr 1949). In 1959 the Black Butte Reservoir area was again visited, this time by A. Treganza and W. Schumacher. These archaeologists selected three sites for excavation in the summer of 1960.

In the summer of 1966, a U.C.L.A. crew under the direction of Joseph Chartkoff surveyed portions of the area within the proposed Newville-Paskenta reservoir (Chartkoff and Childress 1966). The survey area is quite similar in vegetation, hydrography and topography to the Middle Cottonwood Drainage Basin Area (described in Chapter II of this report), with elevations ranging from about 400-800 feet above mean sea level. Several intermittent streams drain through the foothill gap at Newville which together form the North Fork of Stoney Creek, much like the Cottonwood drainage pattern further to the north. The survey of the Paskenta-Newville area involved examining approximately 41 square miles of territory and resulted in recording 65 prehistoric and historic sites (Chartkoff and Childress 1966:2). Thus, on the average, 1.58 sites -- including both prehistoric (47) and historic (18) -- were recorded for each square mile of territory surveyed.

The most recent major survey within northern Nomlaki-southern Wintu territory was undertaken by Jensen in the spring of 1978. Jensen's survey involved archaeological

reconnaissance at the two proposed reservoir sites located along Cottonwood Creek (the Tehama and Dutch Gulch proposed reservoirs). The primary objectives of the Cottonwood archaeological survey were to attempt to relocate sites previously recorded in 1966 by fieldworkers from U.C.L.A. (Johns 1969; Leonard 1969) and to examine approximately 10% of the land area located below gross pool at both of the reservoir sites (Jensen 1978). At the Tehama Reservior site (the southernmost of the two) the project involved stratifying the entire sampling universe and then examining each of the strata in proportion to its area in relation to the entire sampling universe. At the Dutch Gulch Reservoir site, the project called for an intensive 10% survey to be accomplished within pre-determined areas along the North and Middle Forks of Cottonwood Creek.

The relocation and intensive surveys led ultimately to the production of site predictive models for both Reservoir areas (Jensen 1978:57, 128). A total of 45 sites were formally recorded for both reservoirs. At Tehama, 10 prehistoric and 4 historic sites were recorded, and at Dutch Gulch the figures were 25 prehistoric and 6 historic. Jensen's survey did not include the excavation of test pits, so that time depth estimates based on recovered diagnostic implements are available for only three of the aboriginal sites, all of which appear to date to the late prehistoric or Protohistoric period.

At the most general level, four classes of aboriginal sites have been noted within the Middle Cottonwood Creek Drainage Basin. In descending order of frequency they are (1) aboriginal middens with house pit depressions (17 examples); (2) aboriginal middens with no house pit depressions evident on the surface (15 examples); (3) aboriginal sites consisting of lithic surface scatters only (3 examples); and (4) aboriginal sites with no midden but containing a light lithic surface scatter and house pit depressions (1 example). Johns (1969) had earlier attempted to classify Cottonwood Creek sites on the basis of apparent clustering of site features, thereby producing a series of discrete site types. Such an analysis, which would constitute preliminary data in the study of areal settlement patterns and perhaps involve application of central place models (cf., Haggett 1965), is currently being initiated by G. Henton of California State University, Chico. However, final site classification must await completion of the intensive site survey, and cannot really be finalized until test

excavations have been initiated.

At this point there is some preliminary evidence to indicate that most of the differences noted above for the four "types" of site cross-cut other distinctions, such as surface area, midden depth and volume, presence or absence of surface artifacts, color and consistency of midden, and locational data. At the moment all that we can really say is that most of the sites occur along the first stream terraces of the North, Middle and South Forks of Cottonwood Creek and Dry Creek, with only a few sites being recorded on the ridges overlooking these major streams. Only three aboriginal sites have been recorded along elevated portions of the floodplains.

At both the Tehama and Dutch Gulch Reservoir sites the data on site distribution appears quite comparable at this time. However, some interesting and perhaps significant differences in site density between the two reservoirs have emerged. The density of sites at Tehama Reservoir has been projected at about 1.5 sites per square mile. This figure compares quite closely with the results obtained by Chartkoff and Childress during their survey along Stoney Creek within the Paskenta-Newville area. However, the site density at Dutch Gulch Reservoir has been documented for a portion of the area at 4.899 sites per square mile. Ultimately we will undoubtedly be considering several variables in attempting to explain this difference. However, at the present time, one obvious potential explanation may be derived from the ethnographic data available for the Bald Hills Wintu.

Both Kroeber (1925) and Du Bois (1935) place the boundary separating the Wintun (Nomlaki) from the Wintu at the ridge separating the Middle Fork of Cottonwood Creek from the South Fork of Cottonwood and Dry Creek. Thus, the South Fork and Dry Creek may have constituted something of a "no-man's land", similar to the situation which apparently prevailed between Butte Creek and the Sacramento River south of Chico and north of the Sutter Buttes. At least, this situation may have prevailed for certain episodes during the prehistoric past, a fact which in turn may have altered the status of the Tehama Reservoir area in the eyes of the aboriginal occupants. Such an altered "status" may have led to slightly different land use patterns, or at least differences in the intensity of land use within the Tehama Reservoir area. This may also help explain the fact that no "large" house pit depressions

-- 7+ meters in diameter -- were recorded for the Tehama Reservoir area, while at least 4 such large house pits were recorded at three different sites at the Dutch Gulch Reservoir area.

One other difference between the Tehama and Dutch Gulch Reservoir areas in terms of site type/density/distribution involves the presence at Dutch Gulch of several shallow middens located either on high second terraces or on the ridge overlooking the terrace and the Middle Fork of Cottonwood Creek. One of these Dutch Gulch ridge middens also contains 3 house pit depressions. At Tehama the only aboriginal ridge site was an extremely light surface lithic scatter near the confluence of the South Fork and Dry Creek. However, this Tehama site was also located adjacent to a small spring and stream, unlike the Dutch Gulch situation in which the ridge and high terrace sites are located a considerable distance from water. In fact, no particular resource seems unique to the ridge area except perhaps for the fact that this area affords a commanding view of the stream terraces and the access trails which follow along these terraces and the floodplain. Yet, while these Dutch Gulch ridge sites are somewhat removed from water, the ridge area is not so remote or inaccessable that it would have offered any serious strategic advantage as a refuge. Moreover, one of the sites (CA-SHA-722) is sufficiently large that it does not appear that it represents a ceremonial retreat.

A similar site distribution feature was encountered by Chartkoff and Childress (1966) during their survey at the Newville-Paskenta proposed reservoir area. A total of eight aboriginal sites were located along an area known as Rocky Ridge. Their explanation of this feature of site distribution involved an hypothesis which was predicated upon a connection between the ridge sites and the initial period of white settlement in the area, an hypothesis which may help explain the situation at Dutch Gulch as well. At Dutch Gulch, the initial period of white settlement lasted for about 10 years, between 1850 and 1860. This initial period of white settlement followed the epidemics of 1832-33, in which local aboriginal populations were severely decimated. The result of the combination of greatly reduced population followed by white intrusion into the area was probably a displacement of the Bald Hills Wintu from their lowland sites and movement into the less-desirable sections of their territory for a short period of time until they were either forced onto reservations,

died out, or moved to other regions.

While excavation within northern Nomlaki territory has not been extensive, there is some reported information available. As already noted in the discussion of Redding area prehistory, Treganza undertook excavations at site TEH-58 at the Redbank Reservoir site near Red Bluff (Treganza 1954). In addition, Treganza and Schumacher excavated three sites within the Black Butte Reservoir area in 1959. Pritchard is reported to have undertaken some excavation at site GLE-97 (cited in Edwards 1970:16), and Edwards initiated archaeological excavation at three sites located along Thomes Creek. Moreover, if we assume that the River Wintun living at the same latitude as the Newville area are to be considered Nomlaki as noted by Chartkoff and Childress (1966:1), then two other excavations are of significance to Nomlaki prehistory. Both of these latter two projects involved sites north of the town of Hamilton City. The excavations were undertaken by the U.C.L.A. Archaeological Field School in the summer of 1965, one at the Bambauer site located on the west side of the Sacramento River at the confluence of Rice Creek and the Sacramento River in southern Tehama County (Durbin 1966), and the other at the Case site located on the east side of the Sacramento River about three miles south of the town of Vina (Burnham 1966).

For the most part these excavations have tended to enlarge upon Goldschmidt's (1951) depiction of the ethnographic Nomlaki, much as the excavations within the Redding area produced evidence of a prehistoric culture directly ancestral to the ethnographic Wintu. The three sites excavated by Treganza and Schumacher at Black Butte were all relatively late in time, and indicated that the Nomlaki relied heavily on acorn production for their basic subsistence. However, Treganza was unable to excavate a cemetery at Black Butte, and therefore was not able to produce an artifact inventory for Nomlaki culture which could be considered complete. Even his earlier excavations at the aboriginal cemetery at site TEH-58 failed to produce evidence of an occupation earlier than the Protohistoric period.

Using current archaeological site inventories as well as ethnographic data as guides, it is clear that many Nomlaki sites are located in the Coast Range foothills and mountains located to the west of the valley areas, so that our understanding of prehistoric Nomlaki life, which is currently

based largely on data derived from valley sites and which tends to depict them as the possessors of a meagre and simple technology, may simply be erroneous.

Recently, however, Edwards (1970) initiated excavation at three prehistoric sites located along Thomes Creek. Edwards' stated objective was to attempt to extend our knowledge of northern Sacramento Valley prehistory beyond the Protohistoric period. As a result of his work, Edwards postulates a three-phase prehistoric sequence.

The earliest phase is referred to as the Northern Millingstone Phase and was represented within the Thomes Creek Locality at all three of the sites excavated. This phase is defined by the presence of the following recovered and inferred attributes: manos and metates only; extensive core and flake industry; large basalt and chert projectile points more frequent than small obsidian points; great dependence on local material in the manufacture of lithic artifacts; grooved net weights are present; rock features comparable to ethnographic fish "ovens" are present; bone and shell refuse scarce and not utilized for tools, or perhaps not preserved in most site contexts. Perhaps the single most significant or diagnostic feature of the phase is the presence of millingstones and the complete absence of the mortar-pestle complex. The hypothesis which seemed most realistic in accounting for this feature of the assemblages is that these components represent fairly early occupation within this area by groups which did not exploit the acorn but relied primarily on hard seeds. Edwards estimates that the Northern Millingstone Phase at Thomes Creek dates to between 2000 and 5000 years B.P., an estimate based on typological comparisons with other millingstone dominated sites as well as obsidian hydration-based age estimates (Edwards 1970:38).

The Northern Millingstone Phase was followed by the Tehama Phase, which is estimated to date between about 0 - 1000 A.D. This Phase is considered transitional between the millingstone and the mortar-pestle phase or Shasta Complex documented to the north. The Tehama Phase includes both manos and metates as well as mortars and pestles, and also apparently involved greater trade and interaction with the Delta and Northwest Coast regions of northern California.

The terminal period of occupation within the Thomes

Creek Locality, identified at only one of the three excavated sites, has been equated with the northern California Shasta Complex (Edwards 1970:39).

As with Clewett's work in the Shasta Dam area and as indicated within the existing North Coast Range prehistoric sequence, Edward's work within the northern Sacramento Valley tends to support the model of northern California adaptation and occupation hypothesized by Chartkoff, Miller and Johnson (n.d.).

Yana Territory Prehistory. In the spring of 1952 and again in 1953, archaeological excavation at Kingsley Cave was initiated by M.A. Baumhoff (1955). Kingsley Cave is a rock shelter located about 20 miles east of Red Bluff on the southwestern slope of the southern Cascade Mountains. The site is located at 2,000 feet elevation within southern Yana, or Yahi territory.

A large number of lithic, bone and shell artifacts were recovered during excavation, including a total of 329 projectile points (ibid.:43). This category of artifact was the most useful in attempting to place the Kingsley Cave materials in the cultural context of northern California, and Baumhoff undertook careful comparisons with specimens recovered within Eldorado, Placer, Sacramento, Lake, Mendocino, Shasta, Mono, Tehama, Modoc, Humboldt, Lassen and Siskiyou Counties as well as sites from southern Oregon (ibid.:46). Based on these projectile point comparisons, as well as analysis of all bone, shell and other lithic artifacts, the excavation of several burials, and a statistical analysis of artifact type/depth distribution, Baumhoff offered several important conclusions concerning prehistoric occupation at this site.

At the most general level, Baumhoff notes that the site was probably used as a winter camp by peoples who probably moved into the mountains in the spring or summer. The subsistence was apparently based in large part on deer which used the surrounding territory for winter range, and upon acorns and pine nuts as evidenced by the large number of plant food processing implements recovered.

Statistical analysis of depth distribution of particular artifact categories indicated that manos and metates were more abundant than mortars and pestles in the lower levels of the site, although Baumhoff notes that this interpre-

tation was complicated by the presence of large number of mortars and metates concentrated in rock features and burial cairns. Additionally, some Haliotis ornaments as well as Type 2 projectile points (large, square-stemmed specimens) also correlate with greater depth than other artifact categories recovered.

Although all of the artifact types recovered from Kingsley Cave possessed counterparts within other northern California sites, the range of categories indicated that occupation of this site could have occurred as early as Middle Horizon times and continued through the early Protohistoric period (Baumhoff 1955:67-8). In order to account for the apparent mixing of apparently later with earlier artifact types, Baumhoff presents the following two hypotheses:

(1) the deposit may represent but a brief span of time, with the relatively older artifact types being "mere survivals" within this rather remote area of northern California. This would explain how late period forms of projectile points occur at the same levels as do artifacts identified as antecedent forms on the basis of their dated occurrence at other California sites.

(2) the site was first occupied by a group using some of the older artifact types; this period of occupation was followed by an influx of people from the Central Valley probably around the time of the earliest appearance of Euroamericans into this area. The valley "intruders" would have brought with them the Late Horizon artifact types and, because of their intensive use of the site as a cemetery, these artifacts were subsequently distributed throughout certain parts of the midden.

Baumhoff felt that the second explanation was probably most accurate, but that in either case the predominant influence during prehistoric times appears to have come from the west. Baumhoff also noted, however, that the prehistory east of Kingsley Cave was virtually unknown, so that this conclusion concerning primary western affiliation might simply be more apparent than real.

Stimulated by the results of his 1952-1953 research within this archaeologically unknown area, Baumhoff returned to Yana territory for additional excavation in 1956 (Baumhoff 1957). This time Baumhoff excavated another cave site

within Yana territory known as Payne Cave located above Antelope Creek. Again, projectile points constituted the most abundant and chronologically most sensitive artifacts (Baumhoff 1957:10). In addition to a wide range of lithic and bone artifacts, burials and a large number of Euro-american items, Baumhoff recovered basketry, matting, and cordage fragments.

Based on analysis of these materials and an extensive examination of relevant historic documents, Baumhoff suggests that the site was used in the late 1840's and probably continued in use until at least 1875 when the Sierra Lumber Company flume was built through the area. In addition, however, the site was probably also occupied in very late prehistoric times as suggested by a comparison of the depth frequencies of non-perishable aboriginal artifacts against the depth frequencies of non-perishable historic artifact classes. In any case, however, the time span of occupation was estimated at not greater than about 300 years (ibid.:27).

Upon comparison of the Payne Cave collection with the nearby Kingsley Cave collection, it was apparent that many of the aboriginal artifact types recovered from Kingsley Cave did not occur in Payne Cave. Since at least the major part of occupation at Payne Cave was clearly correlated with the Protohistoric period of hiding among the Yana, the implication was that most of the deposit from Kingsley Cave derived from the prehistoric period. Moreover, since this latter site contained considerable depth and an extensive range of artifact types, it was further concluded that Kingsley Cave represented a considerable period of time as well as some cultural change. These inferences led to the first prehistoric chronology for the region. Baumhoff proposed the names Kingsley for the earlier complex and Mill Creek for the later complex, with the former represented only at Kingsley Cave and with several of the former's artifact types probably continuing into Mill Creek Complex times.

The Kingsley Complex includes large, side-notched and square-stemmed projectile points representing more or less diagnostic forms within this context, accompanied by triangular and straight-base examples.

The Mill Creek Complex is characterized by Desert Side-notched, expanding stem and tapering stem projectile points

as more or less diagnostic forms, associated with a variety of additional forms including bifurcated stem and small and oval-shaped side-notched forms. Unshaped mortars and metates continue from the earlier Kingsley Complex, although the Mill Creek Complex sees the appearance of the hopper mortar.

The Mill Creek Complex was compared with available archaeological information from the northern Sacramento Valley and the Shasta Dam area. While significant similarities were noted, particularly with regard to the late occurrence of the Desert side-notched points, important differences were also noted. In particular, Baumhoff emphasized the evidence for strong ties between northern Sacramento Valley/Shasta Dam area sites and sites located within the Central Valley and Northwest California Coast, ties which were not especially evident at either Kingsley or Payne Caves.

Closer ties were seen between the Yana materials and materials collected from areas to the east and south. Baumhoff notes a correspondence between the Kingsley Complex and the Sierran Martis materials, while the Mill Creek Complex materials were correlated more closely with the Sierran Kings Beach assemblages. Overall, however, the Sierra Nevada's Martis compared more closely with Kingsley Complex materials than Kings Beach did with the Mill Creek assemblage. This was interpreted as implying the existence of a rather homogenous and widespread underlying culture in earlier prehistoric times, followed by greater cultural differentiation during later prehistoric times (Baumhoff 1957:35-6). Indeed, Baumhoff's observations concerning differentiation within the Desert side-notched points from various areas within the Sierra Nevada and California led him to undertake a more extensive study of the temporal and geographic variability within this artifact category (Baumhoff and Byrne 1959).

Since Baumhoff's pioneering work, Johnson has undertaken some reconnaissance and limited test excavation within Yana territory. However, these materials remain unpublished and generally uncirculated (Johnson 1972). Thus, our current direct knowledge of Yana territory prehistory extends back to no more than about 2000 years B.P., although extrapolations from areas immediately to the northeast (Squaw Creek materials, for example) and to the north (Klamath Region, for instance) suggests a much longer period of prehistoric

occupation for the general area.

Northeastern California. Northeastern California includes all of Modoc and Lassen Counties and portions of eastern Siskiyou, Shasta and Tehama Counties. This region embraces the contact zones between the Great Basin and the Columbia Plateau physiographic provinces, and, as noted in Chapter II, is atypical of most of the rest of California. However, only the westernmost portion of the Northeastern California physiographic province, represented by easternmost Siskiyou, Shasta and Tehama Counties, is included within the present Inventory Area, with both Modoc and Lassen Counties being excluded.

This portion of the Inventory Area includes territory occupied by the ethnographic Modoc, Achomawi, Atsugewi and Yana. Yana prehistory has already been discussed in relation to north-central California pre-history, leaving us with the Modoc, Achomawi and Atsugewi. However, northeastern California generally, and that portion included within the Inventory Area in particular, have not been subjected to intensive archaeological survey or excavation. Yet adjacent portions of southern Oregon and the Great Basin provinces have been the focus of intensive and productive archaeological investigation for a number of years. Continuous human occupation within the Great Basin and portions of southern Oregon has been suggested by Hughes (1971), O'Connell (1971, 1975), Jennings (1964), Cressman (1956), Bedwell (1970), Jensen (1976), and others. Moreover, significant post-Pleistocene changes in climate, hydrography and floral and faunal resources and distributions have been documented for the Basin (Antevs 1948, Weide 1968) and correlated with prehistoric human occupation (Baumhoff and Heizer 1965). It is clear, therefore, that the following discussion of the prehistory of those portions of Northeastern California included within the Inventory Area must rely in large part on data and information available from other areas of Northeastern California, the Great Basin, and southern Oregon.

Excavations within Lovelock Cave in west-central Nevada were initiated in 1914 by L.L. Loud. The site is located above the ancient shoreline of Pluvial Lake Lahonton in the Humboldt Lake Basin. Loud was assisted by Harrington in 1925, both men attempting to salvage some of the cave's remains from on-going vandalism and unauthorized collecting. Loud and Harrington documented significant culture change

within three distinct levels of occupation which they named Early, Transitional, and Late (Loud and Harrington 1929). The lowest levels of the site were characterized by atlatls and dart points with no evidence of the bow and arrow, while the Transitional levels included both atlatls as well as evidence for bows and arrows. Basketry was noted throughout the sequence, although the later levels of the site, in which no evidence of atlatls was found, were clearly associated with historic Northern Paiute material culture.

The work of Loud and Harrington at Lovelock Cave documented that the Desert West had been occupied for a considerable length of time; while the later occupants were clearly ancestral to the Northern Paiute of the ethnographic period, the earliest occupants of the site possessed a material culture quite similar to the Basket Maker peoples of the American Southwest. The Lovelock Cave sequence stimulated as well as provided a useful point of reference and comparison for subsequent archaeological work within Nevada as well as Northeastern California and southern Oregon.

In 1935 Canfield and Crouch initiated archaeological survey within the Lava Beds National Monument area (Canfield and Crouch 1936), a portion of which is included within the present Inventory Area. In addition, these authors present the results of their preliminary excavations within Fern Cave, suggesting that two separate occupations of the cave may be indicated. Lastly, several additional petroglyph sites within the area were located, and comparisons were made with petroglyphs and pictographs which Steward had earlier (Steward 1929) recorded within the Lava Beds National Monument, around Tule Lake and near Willow Creek.

In 1936 Cressman initiated archaeological research in the Guano Valley region of the northwestern Great Basin. Recognizing the significance of possible climatic changes which may have occurred during and after the Pleistocene within this region, Cressman undertook archaeological survey and excavation within the vicinity of several pluvial lake basins. Cressman's research resulted in the recovery of several then distinct projectile point types as well as a unique twined basketry which he named Catlow Twined, leading him to conclude that he was dealing with a culture very different from that known at the time for the Great Basin and Southwestern United States. However, Cressman's informa-

tion did not support Steward's later conclusion (Steward 1940:459-60) that the Great Basin cultures were all contemporaneous with or later than Basket Maker of the Southwest (Cressman 1936:44).

In 1939-40, Cressman returned to southeastern Oregon and undertook additional excavations within Catlow, Roaring Springs, Paisley and Fort Rock Caves in an effort to unequivocably document the presence of early human occupation within this region. He was succesful in discovering stratified cultural remains within each of the caves both above and below the Mount Mazama pumice layer. The significance of this discovery was clear: dating of the pumice layer would provide dating for the associated cultural materials and the possibility of establishing a firm chronology for the northern Great Basin.

With his stratigraphic information, Cressman proceeded to compare his northern Great Basin materials with other Great Basin and Southwestern data, and provided a tentative reconstruction of northern Great Basin prehistory (Cressman 1940:14): Early Man entered the northern Great Basin and adapted to the lacustrine environments created by the late Pleistocene pluvial lakes; the atlatl constituted the primary weapon whose darts were tipped with a variety of stone points; the bow and arrow joined and eventually replaced the atlatl at a later date; basketry was strongly developed, and Cressman argued that this area functioned as the center of diffusion for the distinctive Catlow Twined variety of basketry. Cressman also noted a change in faunal remains within the Oregon sequence, although he was uncertain as to whether the change was caused by environmental fluctuation, altered hunting habits and food preferences through time, or some combination of the two.

Having established the presence of Early Man in the caves of southeastern Oregon, Cressman shifted his focus of study to the Lower Klamath Lake region in Northeastern California. Earlier surface collections within the area undertaken by Frank Payne had indicated that several different phases or periods might be represented within the Lower Klamath Lake region. Cressman proposed excavating a series of trenches within several site areas to ascertain whether *in situ* evidence of time depth could be obtained (Cressman 1942:302-5). His primary research objectives fell into two parts (Cressman 1942:302):

> ... (a) examination of the association of artifacts with the fossil fauna to determine whether the association was original or derivative, and (b) a study of the character of the human occupation of the lake to discover, first, the number and character of horizons represented; second, variations, if any, in these horizons in different parts of the lake; and, third, the general chronological sequence of the horizon or horizons represented....

Based on his excavations at (1) the Narrows, located about one mile south of the Oregon border and identified by an old channel, (2) the Cove, located at the southern end of the channel, and (3) Laird's Bay, located at the south end of Lower Klamath Lake, Cressman (1942) proposed three cultural horizons. The earliest, named The Narrows (Cressman 1942:97-102), contained the remains of extinct fauna in apparent association with human remains; the horizon was dated to the period between about 8000 and 5500 B.C. This horizon was typified by the presence of "very crude projectile points, willow leaf in shape, with one surface flat and the opposite having a high dorsal ridge, and by beveled-edge knives, much weathered grinding stones, and fossilized bone foreshafts (ibid.:305)." The second or middle horizon was called Laird's Bay and contained bone awls, flat and oval manos, side- and corner-notched projectile points and a variety of other lithic implement types. Cressman estimated the assemblage to date to the period between about 2000 B.C. and A.D. 1, an estimate which was based on Antevs' dating of the associated ancient peat beds within the lake bottom. The third horizon was called the Modoc and contained "historically modern materials" which are typically found on the surface of the present lake shore and on some of the Lake's islands. Most of the projectile points contrast with the earlier specimens in being smaller and better made and characterized by barbs and corner notches. In addition, antler wedges, pipes, shell beads and bone awls were recovered within this assemblage which Cressman dates to the period between about A.D. 1 and the ethnographic period.

In his 1942 publication, Cressman speculated about the diffusion of culture traits into and out of the northern Great Basin. He suggested that peoples migrating out of the northern portion of western North American may have separated at the Humboldt River in Nevada, one group settling at

Lovelock Cave, a second group continuing westward from Goose Lake and down the Pit River or perhaps southwestward through the Lower Klamath Lake area, and a third group possibly migrating eastward eventually settling in the American Southwest. In any case, Cressman's 1942 work represents the first attempt to understand cultures which may have existed within the Lower Klamath Lake Basin prior to the arrival of the ethnographic Klamath and Modoc Indians, and in this regard provided an excellent base from which to initiate a more thorough understanding of Northeastern California prehistory.

Cressman's 1942 publication included a report by R.F. Heizer. Heizer's paper included a review of excavated materials recovered from Tule Lake by K.S. Leatherman, an analysis of rock cairns, cremations and burials recovered from the south shore of Tule Lake by Payne, as well as data from Heizer's own excavations at Massacre Lake in northwestern Nevada (Heizer IN Cressman 1942:123-34). The Tule Lake cave and burial data included small obsidian projectile points, Pacific Coast shell beads, basketry, nets, cordage, as well as some botanical data. Heizer concluded that most of these remains were of fairly recent vintage, closely resembling ethnographic materials or late prehistoric artifact types already recorded for sites in adjacent areas (ibid.:127).

In 1948 Ernst Antevs published his findings concerning climatic change in the Great Basin and Western North America (Antevs 1948). Using geological and other evidence, Antevs developed the concept of the Neothermal, a period of increasing heat which followed the termination of the Pleistocene and subsidence of the last major glaciers. The Neothermal was in turn subdivided into three temperature periods, called the Anathermal, the Altithermal and the Medithermal. The data on changing temperatures and associated fluctuations in floral and faunal associations was of great importance to the archaeologists attempting to understand prehistoric patterns of land use and migration within particular areas of Western North America. Moreover, Antevs' work provided the basis for future productive cooperation between archaeologists and geologists: the archaeologists could clearly benefit from the findings and discoveries of geologists, while much needed geological data could be obtained only from archaeological contexts.

In 1949 Riddell and Fenenga reported on their excavations

within Tommy Tucker Cave, a site located within eastern Lassen County at the western edge of the Great Basin physiographic province (Riddell and Fenenga 1949). The site is located above the present shore of Honey Lake, itself a remnant of ancient Lake Lahonton. However, the assemblage was dated to late prehistoric times, and thus the authors could not make productive use of Antevs' recently published data.

The decade of the 1950's saw additional important archaeological research undertaken within Northeastern California by Riddell, Heizer, Squier, and others. In 1952 Heizer published a summary of cave excavations undertaken within California, and included a location map for Northeastern California cave sites which had been recorded and/or excavated. In the same year, Wallace and Taylor (1952) reported the results of their excavations of site CA-SIS-13, a rockshelter site located in west-central Siskiyou County and within the Inventory Area. Wallace and Taylor recovered a total of 493 artifacts, including wood, basketry, clay and hide items which were preserved within the dry cave matrix. A large variety of projectile points was recovered, including a high percentage of triangular, tapering-stem forms similar to Late Period examples from southern Oregon and northern California sites.

In 1956 Riddell published a final report on the archaeology of Tommy Tucker Cave (Riddell 1956b) as well as a summary report on archaeological investigations within Lassen County generally (Riddell 1956a). Riddell subsequently undertook excavations at Amadee Cave (Riddell 1958) and at the Karlo Site (1960). In 1958 he reviewed his findings within the Honey Lake region, comparing his results with Nevada's Lovelock Cave sequence in an attempt to define the westernmost periphery of Great Basin influence and interaction (Riddell 1958).

In 1952 and 1954, Squier and Grosscup reported on the results of their archaeological survey within the Lava Beds National Monument, during which a total of 163 sites had been recorded (Squier and Grosscup 1952; 1954). Their reconnaissance concentrated primarily on lava tube caves and the former shoreline of Tule Lake. Nevertheless, four site types were distinguished: (1) Cave and rockshelter habitation sites, represented by 18 caves distributed throughout the Monument and 13 rockshelters restricted to Gillen's Bluff and Petroglyph Point; (2) Surface sites,

primarily surface lithic scatters without associated midden accumulation, represented by 81 examples near Tule Lake's south shore and 37 additional examples found within the interior of the Lava Beds; (3) Petroglyph sites, represented by 15 examples, most of which were contained within caves or rockshelters around the periphery of the Lava Beds; and (4) Burial and cremation areas, represented by 2 examples each.

Squier continued his work within the Tule Lake and Lower Klamath Lake Basin, and in 1956 reported on the results of his excavations at three rockshelter sites located within Tule Lake Basin, two open sites located on Lower Klamath Lake, as well as additional surface reconnaissance within the Lava Beds National Monument (Squier 1956). Squier linked his findings with Cressman's sequence for the Lower Klamath Lake area. In 1942 Cressman had defined two early cultural complexes for the region which he had called the Narrows (assigned to the Anathermal) and the Lairds Bay Complex (assigned to the early Medithermal) (Cressman 1942:97-102). Cressman's third or final occupation phase was called the Modoc dated from about A.D. 1 through the ethnographic period. Squier divided Cressman's third Horizon into three phases called Tule Lake, Gillem's Bluff, and Indian Bank (Squier 1956:2, et passim.). Tule Lake, the latest of these Late Horizon phases, represented the culture of the late prehistoric and protohistoric Modoc Indians. As Squier notes (ibid.:2):

> This phase is characterized by numerous small triangular points of a variety of types, with the small triangular and small side-notched, concave base ("Shoshone") [i.e., Desert Side-Notched] types being the most abundant. Large obsidian blades are common. The basketry is twined. Split mammal bone awls and antler and bone flaking tools occur frequently. Bird and mammal bone beads, bird bone tubes, Dentalia, Olivella and Glycymeris and pine nut beads are frequent finds. Clam shell disk beads are rare and so far have been found only with cremations having Caucasian artifacts. The principal food-grinding implement was the hoppered slab mortar, with the thin grinding slab somewhat less common and the portable bowl mortar rare....

The second, or intermediate Late Horizon phase was the Gillem Bluff Phase which derived from former high lake levels in Tule Lake, and was encountered stratigraphically lower in one site than the Tule Lake materials. Projectile points were rare in this phase, with a numerical predominance of large and medium sized specimens. Large obsidian blades and split mammal bone awls continue, and several stone mauls were noted. Thin grinding slabs represent the most common grinding implements.

The earliest of the Late Horizon Phases is the Indian Banks Phase, which is differentiated from the Gillem Bluff Phase primarily on the basis of slight projectile point as well as significant grinding implement differences.

In 1961 Swartz reported on a site survey of the south shore of Tule Lake which was undertaken in conjunction with construction of an access road along the southern shore of Tule Lake and the base of Gillem's Bluff (Swartz 1961). Swartz' survey supplemented the earlier survey by Squier and Grosscup (1952; 1954) and resulted in recording 29 previously unrecorded sites.

Swartz' survey was followed by excavation at site SIS-101, a large, historically documented village site located on the Peninsula on the south shore of Tule Lake (Swartz 1964). Although much of the material represented a mixed, disturbed deposit, Swartz nevertheless identified four separate components. Components I and II were considered equivalent to Laird's Bay, phases I and II. Component I, the earliest of the four, was characterized by the presence of large, lanceolate projectile points which Swartz suggested date to some time prior to about 1500 B.C. Component II, dated to the period between about 1500 - 500 B.C., was characterized by large, concave-base points, straight base triangular points, bowl and slab mortars, and secondary cairn burials. Component III was equated with Squier's Tule Lake Phase, and included small, triangular projectile points, metates, twined basketry, human cremations, and circular semi-subterranean structures. And Component IV, the latest of the four, represented historic Modoc War activity.

However, Leroy Johnson subsequently had occasion to review Swartz' findings, and offered the following observations (Johnson 1969:7):

> Although Swartz was successful in isolating distinctive periods of occupation at the Peninsula Bay site, the Nightfire Island research shows that both Components I and II at Peninsula Bay contain comingled tools of separate occupations that are inextricably mixed in the midden deposits. The stratigraphy, then, is only of the gross sort...

During the period that Squier, Grosscup and Swartz were working within the Lava Beds Monument, at Tule Lake, and around the periphery of Lower Klamath Lake, Cressman again undertook important research within this area, this time in the Upper Klamath Lake region (Cressman 1956). From his excavations at several sites, Cressman was able to document continuous occupation of the area from about 7000 years ago through historic times. The major cultural change seen by Cressman during this long period was a shift from a subsistence pattern in which a wide range of floral and faunal species were exploited to a regional specialization based upon fish and Wokas (ibid.:465).

Despite the fact that some work was continuing within Northeastern California (as noted above), it is clear that most researchers were not as much interested in this "peripheral" area as they were in the prehistory of Nevada and southern Oregon. In fact, by mid-1955 so little information was available for Northeastern California proper that Heizer and Baumhoff were hard-pressed to say anything at all about this area in their discussion of prehistoric California settlement patterns (Heizer and Baumhoff 1956:40):

> In Northeastern California Heizer...has described sites near Tule Lake, and recently Squier and Grosscup...have issued a preliminary report on their work in that area. They have established a sequence of four phases but have not indicated which sites belong to which phases, so that no sequence of settlement patterns can be established. In general, it would appear that archaeological sites are almost ubiquitous on the shores of past and present lakes. For the most part, these sites consist of scattered camp-site areas without midden deposit. There are also many caves in the area, all of which seem to have been utilized aboriginally.

Even the subsequent work by Leonhardy (1967) at the Iron Gate Site, located on the south bank of the Klamath River about 20 miles north of Wallace and Taylor's (1952) SIS-13, failed to produce evidence of occupation beyond the late prehistoric period. The Iron Gate site represents a single component village consisting of 13 house pit depressions and dated to the period between about A.D. 1400 - 1600. Leonhardy notes strong similarities between the Iron Gate assemblage and nearby SIS-13 as well as other late period assemblages from southern Oregon (Leonhardy 1967:37-9).

Nevertheless, archaeological research within Northeastern California was about to enter a very productive period. In an interesting cooperative effort between an archaeologist and a linguist, Baumhoff and Olmsted (1963) took a somewhat novel approach in attempting to date the separation of Achomawi and Atsugewi dialects. Olmsted utilized glottochronological techniques in estimating the date of separation of the Hat Creek dialect of Atsugewi from the Fall River Ajumawi. His results indicated a separation date of approximately 1140 - 1540 B.C. (Baumhoff and Olmsted 1963: 279). Baumhoff, on the other hand, analyzed archaeological materials recovered from a site near Fall River in Modoc County. Although Olmsted's findings were not corroborated by Baumhoff's archaeological data, Baumhoff did note that the archaeological materials documented a more-or-less continuous occupation of this area of Northeastern California by the same peoples from a point in time roughly coeval with Central California's Early Millingstone Horizon through the ethnographic period (Baumhoff and Olmsted 1963:282). Within the Central Valley sequence, however, the Early Millingstone period of occupation was followed by peoples who incorporated the mortar and pestle and presumably introduced an acorn economy. The lack of such a sequence within the Fall River area provided support for the notion that the Early Millingstone peoples within Central California were Hokan speakers who were subsequently displaced to fringe areas of California, including portions of Northeastern California, by Proto-Penutian speakers entering northern California sometime around 2000 B.C.

In 1968, O'Connell and Ambro reported on their excavations within Surprise Valley, located east of the Warner Mountain range within northeastern-most California. This preliminary report and the others which followed (O'Connell 1971, O'Connell and Hayward 1972, O'Connell 1975) documented

a six-thousand year period of prehistoric occupation within the northwestern Great Basin province of Northeastern California.

The archaeological research undertaken within Surprise Valley consisted of site survey and subsurface excavation. Seven categories of sites were recognized during the survey, each of which was defined on the basis of two criteria: (1) location in relation to topographic features, water sources, and biotic communities; and (2) the composition of associated artifact assemblages. The seven site types include lowland occupation, temporary camp, and seed gathering and processing sites, upland temporary camp sites, as well as obsidian quarries, chipping stations and cave sites.

Subsurface excavations at three of the sites revealed a long sequence of occupation which indicated generally constant patterns of settlement and subsistence over the past 6000 years. However, the sequence was divided into four phases, with a fifth phase, not represented by excavated material, postulated for the latest period of occupation.

The earliest phase, called Menlo, is represented at two of the excavated sites and defined by the presence of Northern Side-Notched projectile points, broad lanceolate knives, T-shaped drills, and tanged blades. Other artifact types recovered included antler wedges, cylindrical mortars with V-shaped bowls, and pointed pestles. The occupants utilized semi-subterranean earth lodges for winter habitation within the Valley. Dating for this phase was based on radiocarbon assays as well as artifact comparisons with dated Great Basin examples. O'Connell (1975:33) suggests that the phase represents occupation between about 5 - 6000 years B.P.

The Bare Creek, or second Surprise Valley phase is also represented at two of the excavated sites, and characterized primarily by the presence of Bare Creek series projectile points which in turn are comparable to Pinto or Little Lake points from western and central Great Basin contexts dating between 3000 and 4500 years ago. Ovoid and triangular knives and drills with round, oval or teardrop-shaped handles first appear in the Bare Creek phase. Significantly, domed or conical brush wickiups and windscreens replace the large semi-subterranean earth lodges as domestic structures

and persist throughout the remainder of the Surprise Valley sequence. On the basis of a radiocarbon date and cross-typing the Bare Creek Series projectile points, O'Connell suggests that this phase represents a period of occupation from about 4500 to 3000 years ago.

The third Surprise Valley phase is called the Emerson and includes components obtained from all three excavated sites. Elko series projectile points constitute the only characteristic projectile point style, while the overall artifact inventory remains fairly constant from the preceeding phase. The phase represents a period of occupation within the Valley from about 3000 to 1500 years ago.

The Alkalai phase is the fourth phase of occupation, and represents the latest components at all three excavated sites. Rose Spring series projectile points constitute the characteristic artifact style, with the remaining artifact inventory continuing from the preceeding Bare Creek and Emerson phases. The Alkalai phase represents occupation between about 1500 and 600 years ago.

The Bidwell phase represents the final phase of the prehistoric sequence within Surprise Valley, and is marked by the appearance of the Desert Side-Notched projectile points. Since this phase of occupation was not represented within any of the sub-surface components, the estimate of age was determined on the basis of the occurrence of Desert Side-Notched points from dated contexts within the Great Basin and other parts of California.

Using the concept of site catchment, O'Connell outlines changes in the patterns of subsistence and settlement within the Valley through the successive periods of occupation. While the general character of the refuse obtained from the three excavated sites remained fairly constant in a general sense, O'Connell notes that there were important changes in the size and form of domestic structures, particularly between the earliest (Menlo) and all subsequent phases, and in the relative importance of certain fauna and artifact categories. In general, however, the Surprise Valley sequence and O'Connell's reconstruction of prehistoric settlement/subsistence systems compares closely with data available for other parts of the Great Basin (cf., Thomas 1972, 1973; Steward 1938).

Immediately west of the Warner Mountains, and northwest

of Surprise Valley, Hughes has undertaken archaeological research at Goose Lake and established a cultural chronology for this region (Hughes 1971, 1972, 1974). While his work remains largely unpublished, Hughes has apparently uncovered a rather long prehistoric sequence within the region which is based largely on temporally diagnostic projectile point types recovered from Cuppy Cave in the Modoc National Forest (Hughes 1973).

Further west, along the western shore of Lower Klamath Lake, Leroy Johnson initiated an archaeological research project at a site which will undoubtedly prove to be very important to our understanding of that portion of Northeastern California contained within the present Inventory Area. The site is known as the Nightfire Island site and is located two miles south of the Oregon border near the original western shore of Lower Klamath Lake. The site consists of a low mound which, according to Johnson's preliminary findings (1969:7-9), is composed of:

> ...a series of geologic and cultural strata rich in artifacts, faunal remains, charcoal, and other occupational detritus. The bottom stratum is a lacustrine, diatome-rich silt, stream-sand, and loam variously endurated (forming duripan) or unaltered. Cultural debris reaches a maximum thickness of 3 m. The site promised to help unravel Klamath Basin prehistory because of its discrete occupational components and its apparently long history which appeared to extend back beyond the peak of the Hypsithermal....

Although the final report for this project is not yet available, preliminary information indicates that the site produced greater than anticipated artifact yields, including large numbers of obisidian projectile points, flake knives and scrapers, basalt manos and grinding slabs, bone and antler wedges, shell ornaments, a large number of faunal remains, 30 burials and at least two circular house structures. Additionally, important samples of soil, pollen, faunal remains, obsidian and charcoal were obtained for special studies. Grayson (1972, 1976) has already published his findings with respect to the avian faunal resources, and has suggested a sequence of climatic conditions and change which differ from the pattern documented for most of the Great Basin. Moreover, Grayson has proposed a five-phase

occupational sequence for the site (Grayson 1972:3):

> Phase 1: defined by the presence of leaf-shaped and large side-notched projectile points and rare bone-work, and dated to 4000 B.C. - 3000 B.C. on the basis of three radiocarbon determinations...;
>
> Phase 2: defined by the presence of both corner- and side-notched projectile points, cylindrical mullers, and antler wedges, and dated to 3000 B.C. - 2200 B.C.... on the basis of three radiocarbon dates...;
>
> Phase 3: defined by an increase in relative frequency of corner- over side-notched projectile points, and dated to 2200 B.C. - A.D. 1 by ten radiocarbon determinations...;
>
> Phase 4: defined by the presence of small stemmed and small corner-notched projectile points, and dated to A.D. 1 - A.D. 1000 by four radiocarbon dates..., and;
>
> Phase 5: defined by the appearance of 'winged' or Gunther Barbed projectile points, and estimated to date from A.D. 1000 to A.D. 1400...

As Johnson notes (1969:13), a major finding of the Nightfire Island project has been to establish:

> ...a remarkable picture of cultural stability... Many kinds of data, at present, appear to hint at a long period of isolation and fixed location for the Klamath - Modoc Indians of California and Oregon....

In addition, the project represents an interdisciplinary effort involving archaeologists, geologists, palynologists, linguists, ethnographers, physical anthropologists and physicists. The expectation, then, is that upon completion the project will produce much more than just a prehistoric cultural sequence for the area.

Immediately south of the Lower Klamath Lake, Hardesty and Fox (1974) have reported on an extensive survey of lava beds adjacent to the Lava Beds National Monument as well as territory within the Medicine Lake Highlands. Portions of the former and all of the latter areas are included within the present Inventory Area.

Hardesty and Fox recorded a total of 768 sites within the two areas, and divided the total into five distinctive site types: (1) semi-permanent camps (26 examples); (2) hunting blinds (2 examples); (3) fortifications used during the Modoc War (32 examples); (4) chipping stations (114 examples); and (5) quarry sites (represented by 594 examples). The recorded sites were plotted in relation to eight microenvironments which in turn were defined primarily on the basis of dominant floral species, implying that they were distinct resource zones used by the aboriginal occupants of the area. In addition, the potential human resources within the entire study area were defined as consisting of seven distinct categories; the occurrence of each of these resources within the various microenvironments was then calculated. Finally, the total of recorded sites was analyzed in relation to its distribution throughout the eight microenvironments which in turn included a variable mix of the seven categories of potential human resources.

Hardesty and Fox concluded that hunting appeared to be concentrated within sagebrush zones and particularly in the ecotones between the sagebrush/bunchgrass and sagebrush/ Mountain Mahogany microenvironments. Seed collecting, on the other hand, was found to be positively correlated with the bunchgrass microenvironments near the shores of Tule Lake, a finding which closely parallels the pattern of land use ethnographically documented for the Lower Klamath Lake, although contrasting with the pattern documented for the Great Basin (Hardesty and Fox 1974:32). Thomas Burke provided an addendum to the Hardesty and Fox report, in which Burke examined the Glass Mountain obsidian flow within the context of aboriginal quarrying activity.

The Hardesty and Fox report has been received with some reservations, however. Hughes (1976:2) points out that the report lacks an overall project map locating the individual sites within the microenvironments defined for the study area. Moreover, the lack of time-sensitive artifacts at most of the sites confounds the problem of knowing whether we are dealing with a single land use pattern or, alternatively, a mixture of site types/microenvironmental distribution which represents several different time periods and/or populations exploiting the environment in slightly different ways. Moreover, Boynton (1978 Personal Communication) also emphasizes the need for an overall project map, and further notes that the actual techniques employed during the site survey were never indicated.

At the very least, however, the Hardesty and Fox report includes documentation of a large number of sites within the area which could, through further study, be linked with various microenvironments and the distribution of sites compared with data from adjacent areas.

Very little reported archaeological work has been undertaken south of Tule Lake in eastern Siskiyou, Shasta and Tehama Counties and western Modoc and Lassen Counties. Nevertheless, Patti Johnson has undertaken a site survey along portions of lower Hat Creek, south of its confluence with the Pit River in northeastern Shasta County (Johnson 1973). The survey involved portions of Hat Creek occupied ethnographically by the Atsuge branch of the Atsugewi. Johnson provides site records for two sites which had been recorded within this area by Treganza in 1952, and notes the locations for four additional village sites recorded by Kniffen in 1928 (ibid.:4). Except for these records, no previous archaeological research had been noted for the area prior to Johnson's survey.

Johnson's survey involved a six mile portion of Hat Creek and immediate terrain, and resulted in the discovery of 14 prehistoric sites. The sites were divided into two groups on the basis of presence or absence of midden. The larger, more developed middens were encountered on the bench or terrace above but close to Hat Creek; the remaining smaller, non-midden sites are primarily lithic scatters and located on ridge tops and along the brow of ridges in exposed lava flows. The site distribution pattern recognized by Johnson supported the ethnographic data for site type/distribution within this area (ibid.:7).

Due to intensive local collecting of surface artifacts within the area, the number of temporally diagnostic projectile point forms was minimal. Nevertheless, Johnson (ibid.:7-8) did note the presence of Gunther Barbed, Rose Spring Corner-notched, and additional small lightweight specimens which elsewhere in Northeastern California are characteristic of the late prehistoric period. However, a single bifurcate-stemmed specimen from one of the recorded sites was noted as occurring in an archaeological component radiocarbon dated to the period from about 200 - 600 A.D. (Johnson and Johnson 1969:17), thus suggesting that additional research within the area would produce evidence for pre-Contact period occupation.

Recently some site survey has been undertaken within the Lassen Volcanic National Park and within the Timbered Crater Region, both of which are included within the Inventory Area. Journey (1974) has reported upon an archaeological survey of the Lassen Volcanic National Park, while Horner (Horner et al. n.d.) has reported on several sites and at least two aboriginal trails which proceed through the proposed Timbered Crater Wilderness Area. According to Horner's report (ibid.:4):

> ...one [of the trails] was heavily used for travel between camps near the Hot Springs at Day and camps at the springs of Big Lake. The trail passes along the easiest possible path through some of the roughest terrain in the Timbered Crater area. In places, the rough, black lava rocks have been polished to a silvery smoothness and there are still a few rock markers remaining along the trail....The second Indian trail starts on California State land near one of the roads approaching the Timbered Crater area from the south. It is clearly marked for one-half mile until it vanishes on a high lava ridge....

The Horner report also documents a camp located in the northeast corner of the proposed Timbered Crater Primitive Area. The "camp" is "composed of lava rock foundations, within which 20 to 30 shelters were erected by the Indians" (ibid.). Although the site has apparently been subjected to some collecting, Horner notes that artifacts remain visible on the surface.

In addition to Horner's work, Jerry Johnson has initiated site survey and preliminary excavations within Little Hot Springs Valley located within the southwest corner of Modoc County near Day, California. The excavated site has been dated to approximately 3 - 4000 years ago, with a sequence which presumably corresponds closely with that recorded at Squaw Creek near Shasta Lake (Clewett, Personal Communication, cited in Friedman 1976:13). Written documentation of the project, however, is not yet available, although it is to be included in Johnson's doctoral dissertation which has recently been submitted to the faculty at the University of California, Davis (P. Johnson 1979 Personal Communication). Johnson has also undertaken archaeological survey and test excavation outside of the Timbered Crater region along Battle Creek in southeastern Shasta County.

Again, however, the results of his research will not be available until completion of his dissertation.

Lastly, Janet Friedman undertook an archaeological survey within portions of the Timbered Crater area in late 1976 (Friedman 1977). The survey included an examination of parts of the Mount Dome area as well, located north of Timbered Crater near Tule Lake and the California-Oregon border. Both the Mount Dome and Timbered Crater study areas were surveyed at approximately 5% of the total area, employing an intuitive controlled transect survey strategy (Friedman 1977:8-11).

Within Timbered Crater, a total of three sites were recorded during the survey of 1,284 acres. One of the sites (SHA-561) represents a moderate lithic scatter including two Desert Side-notched projectile points. The second site or "feature" was referred to as a "Squaw Trail" marked by rock cairns at intervals of approximately 15 feet. This trail seems to correspond to the "first" trail described in the Horner report (see discussion above). The third site or "feature" (SHA-562) was a rock cairn built at the edge of a lava tube; Friedman was unsure as to whether or not the feature was aboriginal or, alternatively, represents more recent recreational activity within the area (ibid.:12).

Friedman concluded that the paucity of sites encountered within the Timbered Crater area, a feature which she had anticipated intuitively (ibid.:13), indicates lack of intensive and/or extensive use of the region by aboriginal peoples.

Within the Mount Dome Planning Unit located near Tule Lake and the Oregon border, Friedman recorded a total of 34 sites, all of which represent lithic surface scatters although two were associated with rock circles (Friedman 1977). For purposes of the survey, the Planning Unit was stratified into three separate areas: Mount Dome, Big Tableland, and Mahogany Ridge. Within the Mount Dome unit, fifteen sites were recorded, most of which were located at the base of Mount Dome at elevations ranging from 4400 to 4600 feet above sea level. All of the sites consisted of light to moderate lithic scatters consisting of lithic detritus, modified flakes, and occasional projectile points. In addition, the two most extensive scatters were also accompanied by rock circles which were interpreted as house rings. The projectile

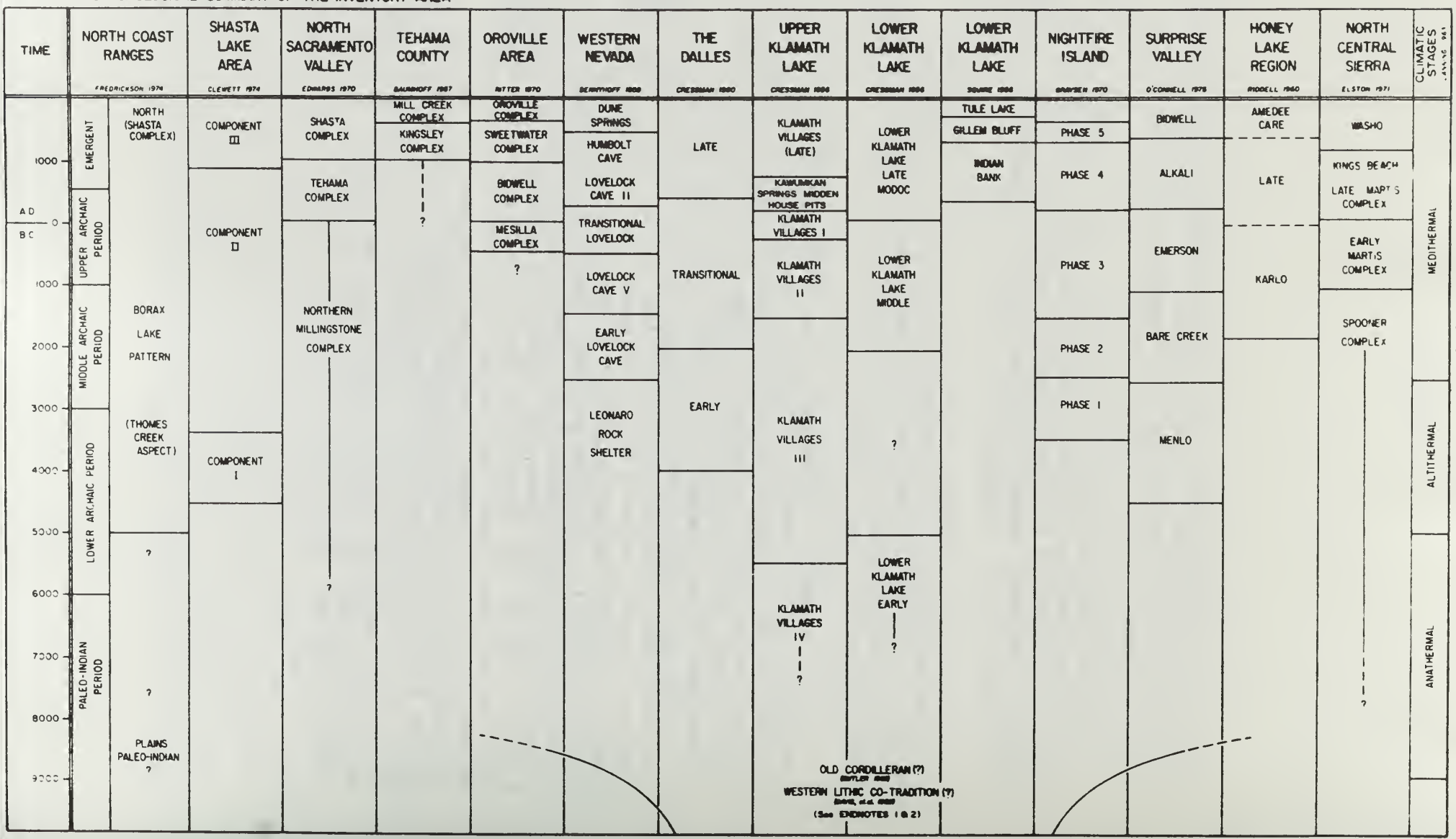
points encountered were either Rose Spring, Desert Side-notched or Cottonwood in affiliation, and thus suggest a relatively late prehistoric occupation affiliated with or influenced by Great Basin cultures.

Within the Tableland unit only a single light lithic surface scatter was encountered (ibid.:10). Although several rock walls of considerable length were noted in the report, they were apparently not formally recorded, perhaps because they fell outside of the survey area.

Within the Mahogany Ridge Unit, Friedman recorded a total of eighteen lithic scatters of light to moderate density. Chipping detritus was the primary constituent, although occasional Desert Side-notched and Rose Spring projectile points were noted.

In her summary, Friedman notes that a number of Quaternary lake deposits extend to the northern and eastern boundaries of a portion of the Mount Dome Planning Unit, and suggested that "...determination of site distribution will be most interesting when viewed in relation to [these Quaternary deposits] and the original shores of Tule Lake and Lower Klamath Lake...." Similar suggestions had also been offered in an overview of the Mount Dome and Timbered Crater regions which Friedman had written for the Bureau of Land Management prior to her survey fieldwork (Friedman 1976). In this earlier document, Friedman presents a cultural resources overview of existing anthropological data for these two areas and adjacent regions. Although there has apparently been some need to re-examine portions of the Mount Dome survey area (Quillen Personal Communication), Friedman's overview represents a fairly thorough review of anthropological information pertinent to the two study areas and adjacent territory, and an extensive outline of future research directions which she feels will produce results useful to the Bureau of Land Management, the scientific community, as well as local communities and the public at large.

TABLE 1: CHRONOLOGICAL SUMMARY OF THE INVENTORY AREA



History

Introduction. The ethnography, ethnohistory and prehistory of the Inventory Area have been discussed, and this section continues the narrative with an examination of the historic period, which in turn refers to the sequence of events as chronicled in historical documents. A comprehensive historical overview of the Inventory Area will be prepared in a separate Bureau of Land Management undertaking (C. Brott 1979 Personal Communication).

The major historic theme of the study area is the interaction of Euroamerican civilization with the aboriginal population of California. Most of the major historical events are in some way directly related to the penetration of native areas by the Euroamericans, and the subsequent need to resolve ensuing conflicts and problems.

Contact. The first European to set foot in northern California was probably Sir Francis Drake, who in 1579 landed somewhere along the coast near Bodega Bay, Drake's Bay or Trinidad Bay. It is possible that deserters from deSoto's expedition left record of their wanderings near the Middle Fork of the Feather River in 1542, but the evidence to support this is scanty at best. W.H. Hutchinson (1948:4-7) notes that a story appearing in the "Weekly Butte Record" of August 2, 1879 reports that deserters from deSoto's expedition left in a knothole of an oak tree a parchment record of their wanderings around the Middle Fork of the Feather River in the year 1542. This would place the Spanish deserters roughly in the vicinity of the Yahi Indians. But as Hutchinson points out, "...the parchment cannot be proved; neither can it be disproved...." Therefore, the Yana may have been contacted as early as 1542, but the question of "first contact" must remain unanswered. According to Hutchinson (1979 Personal Communication), the parchment possibility is now thought of to be more or less a hoax. Although there are researchers still investigating the question, Hutchinson (ibid.) notes further that the validity of the parchment story is insignificant in that if contact had been made as early as 1542, it was largely inconsequential, much as the Nordic discovery of America was insignificant in comparison to the effective discovery of America by Columbus.

In 1769, the Spanish established a mission at San Diego and proceeded to colonize as far north as Sonoma at Mission San Francisco Solano which was established in 1823. The

mission/presidio complex reached no farther north, however, so that the Indians of the Inventory Area were not directly affected by the Spanish regime in California.

The early history of the northern California Indians begins in earnest with the arrival of the trappers of the American Fur Company and the Hudson's Bay Company, with the Russian occupation at Fort Ross resulting in further European influence. The trappers and the Russians were active during the first half of the 19th Century, passing through the area between 1825 and 1840. Their activities led to the primary development of the overland routes, such as the "Lassen Trail," (an off-shoot of the old Applegate-Oregon Road), the "Oregon Trail," and the "California-Oregon Trail" (see Shastan ethnohistory), with the usual entry of the trappers being over the Sierra and along the Pit River (Farris and Smith 1882:144-5). The California-Oregon Trail ran north-south through the area, following in part the Trinity River through Scott Valley. This trail was used by the early trappers of the Hudson's Bay Company, and during the late 1830's and early 1840's it was used for cattle drives from Mexico to Oregon (Lantis et al. 1963).

Between 1821 and 1823 California became the province of Mexico, but the major historic activities related to the Mexican regime took place far to the south of the Inventory Area, with the exception of some land grants in the Sacramento Valley in 1844 (see Yana ethnohistory).

By far the most significant historic event for this area was the discovery of gold in northern California between 1848 and 1851. This brought a tremendous influx of Euroamericans to northern California, resulting in violence, disease and the destruction of aboriginal cultures.

Disease. Disease played a major role in the decimation of native populations throughout the New World. In northern California, Cook (1955) reports that an epidemic disease spread through Oregon and California between 1830 and 1833. Cook and others have determined that the disease was malaria, having been first noted in epidemic form at Fort Vancouver in the summer of 1830. Citations given by Cook (1955:316, 317) suggest that Indians in Yana territory were affected by the malaria epidemic, and other groups in the Inventory Area were undoubtedly in the line of the epidemic as it swept south from Fort Vancouver. Cook suggests that the resulting mortality rate ranged between

40 and 60 percent from this epidemic alone. Further evidence cited by Cook suggests that introduced diseases among northern California Indians reduced the population by 75 percent between 1833 and 1846 (Cook 1955:320).

Government Policy (from Castillo 1978:107-27). Official government policy towards California Indians and American Indians in general has a varied history. California territory became property of the United States under the Treaty of Guadalupe Hidalgo in 1848. Almost immediately gold was discovered, and a massive population influx followed. As Whites encroached on Indian territory and depleted local food resources, bitter conflict between Indians and Whites ensued.

Castillo reports that "...during these early years action against the native consisted of widespread and small personal combats between individuals and little groups" (1978:107). Soon, military action against the Indians became commonplace, with the State and Federal Governments re-imbursing expenses incurred by entrepreneurs seizing Indian property.

> Up to 1860 overall loss of life due to military homicide accounted for at least 4,267 deaths, or about a 12 percent reduction of population (Cook 1943b:5-9). Military casualties reached their peak from 1854 to 1857. None of these so-called Indian wars in the California Valley was more than an attempt at wholesale slaughter of native people (Bancroft 1886-1890, 7:477)(cited IN Castillo 1978:108).

California labor laws at this time were such that Indians could be more or less enslaved to serve "sentences" for crimes such as vagrancy or loitering. Indians were thus herded up to serve their sentences, kidnapped and forced to work under miserable conditions. However, this legalized kidnapping was finally declared un-constitutional in 1867 under the Fourteenth Amendment of the United States Constitution.

Indians were officially dealt with by Indian agents, first appointed by Governor Kearney in 1847. Very little was achieved by the Indian agents, except for a series of un-ratified treaties.

Due to the ineffectiveness of the State Indian agents, the hideous labor laws of the State, and the active participation of the federal government through military action, there was no uniform policy towards the Indians. To help remedy the situation, Congress appointed a new Superintendent of Indian Affairs for California in 1852. However, Edward F. Beale did little in this post and was dismissed in 1854 as widespread corruption was revealed throughout the offices of Indian affairs.

Beale was replaced by T.J. Henley, who established several Indian reservations, including the Nome Lackee reservation in Tehama County. Henley's administration, however, proved to surpass even Beale's in corruption. This led to Congress' "General Appropriation Act of February 1859", which was intended to reorganize the California Indian administration. Under this act, Congress slashed the Indian services budget by $112,000.00, leaving only $50,000.00 to provide food services to Indians under Federal care.

Following this reorganization, Indian-White relations became less strained, but the primary reason for this was simply the massive reduction in Indian population following 20 years of violence and disease.

It was during the next seven to eight years that the reservation system failed altogether. Shortly thereafter, "...a significant change in the administration of Indian affairs occured...after President Grant took office" (Castillo 1978:113), with Indian policy being turned over to various religious denominations.

The Indians continued to die off and be massacred under this "Quaker Policy," as it was called, and little, if any, reform of Indian affairs or policy occurred. The policy was abandoned by 1881.

The next major step in Indian affairs was the massive movement by the federal government to educate Indians throughout the United States. Schools were rapidly established, and Indian resistance followed just as rapidly as the Indians realized the implicit threat to their native cultures and customs. In 1891, school attendance was made compulsory, but with little positive impact.

Beginning in 1906, Congress began to set aside more

land for the Indians, and by 1930 there were 36 reservations established in California. The Indian population had then slowly begun to increase.

After World War II, Congress began to move towards "termination," a policy designed to dissociate the Federal Government from responsibility for Indian affairs. Termination was strongly opposed by the Indians, and recent history illustrates the results of the struggle of the Indians in dealing with the Federal Government. The 1960's witnessed a rapid and dramatic turnabout in government policy as a renewed and sympathetic interest in Indians spread throughout the country and as Indians began to retain legal counsel.

The issue of water rights has been of some significance in recent years, particularly with respect to fishing rights in the northern California area (e.g. the Hupa conflict over Klamath River fishing rights, 1978).

The westward movement in America gave rise to a water policy known as the Appropriation Doctrine, which simply means that the first individual or group to use water resources in an area has the strongest legal claim. The second water user has the second strongest claim, and so on. Moreover, those who use the water do not have to live adjacent to the water source (as was the case formerly under the Riparian Doctrine) in order to establish their claim, since water may be diverted via canals, pipes or other conveyance (Bureau of Indian Affairs 1978).

The doctrine of Federal "reserved rights" came about in 1908 as a result of a suit regarding diversion of water upstream from the Fort Balknap Indian Reservation in Montana (Winters v. United States). The doctrine specifies that Indian reservations created by Congress or by Executive Order have Federally reserved rights to water resources.

Many water rights issues are as yet unsettled. Such issues include conflict between Appropriation Doctrine and reclamation projects, groundwater rights and conflict between Indians' water rights and States' water rights. Currently, national water resources policy is undergoing a serious review by the Carter Administration. The review is being conducted by the Secretary of the Interior, the Office of Management and Budget, and the Council on Environmental Quality (Bureau of Indian Affairs 1978).

Contemporary cultures. Information concerning the contemporary status of specific cultures has been presented in the ethnohistoric sections of our narrative. However, the several major problems associated with researching the contemporary status of extant Indian populations in northern California should be outlined. In the first place, very little data have been published in the last ten to twenty years. This is due, in part, to the reluctance of ethnographers to publish their findings on contemporary cultures, a reluctance which is understandable, as most researchers do not wish to cause undue disturbance or attract unnecessary attention to groups who have already been nearly destroyed as a people.

According to Myers (1978 Personal Communication), the most useful data available concerning extant American Indian cultures can be collected only through additional fieldwork. Such fieldwork involves visiting reservations, local tribal councils, school districts, offices of the Bureau of Indian Affairs, rural health agencies, forestry offices, and so on. However, there are usually few funds available in one's study budget, so that the next best method is to write or telephone, a technique which is at best quite restrictive as to the level and kinds of information obtainable.

Even the local tribal councils themselves are often understaffed and it is not unusual for most of the council's work to be accomplished voluntarily. Therefore, it is often quite difficult for tribal councils to provide data in a form useful to the social scientist. Therefore, due to understaffing and limited budgets, the records available in tribal council offices are often incomplete, despite the dedicated efforts of staff workers.

Another related problem involves substantial inconsistencies in certain classes of data. For example, a rural health agency may possess facts and figures which are inconsistent with data on file with tribal council offices. Moreover, the data collected by the ethnographers may differ from the records of the rural health agency and the tribal council! These problems reflect variations in the methods, objectives and goals of different groups working at different times among single groups of people, and further illustrate the

difficulties associated with collecting reliable data on contemporary Indian cultures.

Nevertheless, there are Indian agencies within the Inventory Area that may be contacted for further information regarding the current status of regional American Indian populations. These include the following: the Tri-County Indian Manpower Development Council in Yreka; the Toyon-Wintu Center, Inc. and the Toyon Conservation Camp in Shasta County; the Pit River Indian Tribal Council in the Redding Area; the Butte County Tribal Council, Indian Health and Manpower Office in Oroville; and the Native American Studies Program and Native American Council of California State University, Chico.

The following figures represent the current Indian populations in counties either within or adjacent to the Inventory Area. These figures are based on the results of the 1970 Census of the United States (California County Fact Book 1976-1977).

INDIAN POPULATIONS BY PERCENT IN COUNTIES
1970 Census

Del Norte County	5.0%
Humboldt County	3.1%
Lassen County	2.3%
Modoc County	2.3%
Shasta County	1.7%
Siskiyou County	2.9%
Tehama County	1.0%
Trinity County	3.8%

Seven Indian reservations or rancherias were located within the Inventory Area at one time. Five of these were terminated in 1958: the Quartz Valley and Ruffeys Reservations in central Siskiyou County; the Montgomery Creek and Redding (Clear Creek) reservations in Shasta County; and the Paskenta rancheria in Tehama County. Only two reservations remain in operation. One of these is Big Bend (Henderson), which in 1951 had a population of 11 Achomawi Indians. Located in Shasta County, this reservation consists of 40 acres in the northeastern corner of the county. The second is the Roaring Creek Reservation, 80 acres very near to Big Bend. However, there are no residents at Roaring Creek (from Heizer 1978:706-711).

IV

ARCHAEOLOGICAL EVALUATION, RESEARCH GOALS and MANAGEMENT OPTIONS

Introduction

Let us assume for the moment that a geographical region's archaeological "potential" could be measured in relation to the number of published accounts and major syntheses which have been produced for that area during the past three decades or so. Those areas with a high frequency of archaeological reportage and synthetic treatment per research project would rank highest in our estimate of potential, while those areas for which fewer reports have been produced might be considered low in potential, all other factors held equal. Within California and the Great Basin, then, we might have to conclude that portions of the southern Cascade Range and the northern Sacramento Valley in particular are perhpas somewhat deficient in significant archaeological materials or information, not capable of contributing significantly to our understanding of California and Western American prehistory generally, nor likely to yield a data base adequate for testing various hypotheses of cultural change and adaptation which derived from areas more thoroughly investigated or areas for which more published materials exist.

Ironically, this "just-so" story could well come true if continuing efforts to synthesize the region's prehistory and update established guidelines for future research are not constantly made. Just a few years ago, the problem had become particularly apparent with respect to the northern Sacramento Valley. During the 1960's and early 1970's, a large number of excavations were undertaken at important prehistoric sites within the area; however, for the most part the resultant collections were simply shelved, and virtually nothing was published concerning most of these sites. The most frequently voiced rationale for this action was that the time for synthesis was not yet at hand, that we didn't quite know enough yet to publish anything, and that what we really needed most were more data and more excavations. Of course, it is always easy -- and correct -- to assert that the data are inadequate. But it is not accurate to suggest that we can't really "get started" until we have more excavations or more specimens, since there will never be enough data to satisfy us, while at the same time these data can never be more significant than the questions we ask of them. Knowledge is attainable on all levels of

information, provided one knows the value of the data; conversely, no amount of data is sufficient in itself to generate spontaneous understanding or wise conclusions.

Even the brief reports which did emerge were circulated among archaeologists in a fashion not unlike the Trobriander's famous Kula Ring in which their "best" armbands and necklaces of Spondyllus and Millipunctatus shells were restricted to the self-proclaimed "elite." Ideally, however, the addition of new facts -- of more data -- should be accompanied by an on-going examination and assessment of existing descriptive and analytic categories, an activity which is facilitated only through publication of research results. All too often, however, archaeological finds appear simply to have been fitted into existing categories without demonstrating the relationships of the entities being fitted nor the logical status of the extant categories. Of course, should the existing categories happen not to represent prehistoric reality, then the problems are greatly compounded.

This era has passed, however, and there are, on the horizon, some very encouraging indications that northern California archaeology and anthropology have entered a more problem oriented phase. The potential of the north State's prehistoric heritage is being reassessed in relation to problems of long term ecological and cultural processes (cf., Fredrickson 1974, Bean and Blackburn 1976, O'Connell 1971, Kowta 1975, 1975a). Harris' (1968:684-85) comments on American archaeology in general are now appropriate for much of the work being initiated within northern California:

> Mere dating and classification have ceased to guarantee repectability in archaeological circles. The demands of the moment are to be met by data on population size, density, minima and maxima in short and long-time runs; seasonal and climatic cycles; response of settlement pattern; rate of population increase, food production techniques; total exploited habitat; short- and long-run changes in natural biota; ...size of food producing and non-food producing groups, village or town units; and intercommunity organization....These interests [have] already begun to yield a better understanding of evolutionary processes.

This change in emphasis in California archaeology derives from a number of sources, including a heightened interest in the ecological and evolutionary perspectives, as well as changes in archaeological theory and the appearance of what is often referred to as the "new archaeology." In other words, an increasing number of California archaeologists have been imbued with a paradigm based upon a synthesis of cultural ecology, cultual evolutionism and general systems theory. As Bean and Blackburn observe (1976:9):

> ...the new perspective on aboriginal California... [has demonstrated a] concern for the development of broadscale hypotheses regarding evolutionary processes and causative variables, an interest in the application of systems models, and an involvement with the testing of archaeologically derived hypotheses against data from contemporary societies....

None of this is by way of saying that more traditional research problems are not of concern nor still of paramount importance within regions where our archaeological knowledge remains quite limited. Indeed, for much of northern California and the Inventory Area, the demands of the moment still require establishing prehistoric chronologies and sequences as well as attempting to estimate or predict the number, types and distribution of sites within areas which have not as yet been surveyed at all or only partially examined.

Northern California Archaeology as a Scientific Resource

The scientific or research potential of the archaeological resources located within the Inventory Area derive from three basic considerations. First, our knowledge of local and regional prehistory is still quite limited, and is based largely on inferences drawn from surrounding areas. Yet an understanding of the prehistoric events within northern California may be pivotal to our understanding of important prehistoric population movements within the Plateau and Great Basin at various times in the prehistoric past, and is certainly crucial to our understanding of the events which resulted in the fragmentation of California Hokan-speakers sometime between about 3000 and 4000 years ago.

Second, portions of northern California supported some of the most dense non-agricultural aboriginal populations recorded anywhere in the world. The prehistoric data from northern California thus bear directly on the problem of understanding socio-economic and socio-political responses to changing modes of subsistence and increasing population densities. By late prehistoric times, in fact, several of the aboriginal groups located within northern California had come to resemble Polynesian or perhaps African chiefdoms more than the Australian or Great Basin band-level societies with which they have too frequently been compared. This fact also highlights the relevance of much of northern California's archaeological data to problems of interest to anthropology as a whole.

Thirdly, the excellent ethnographic data available on indigenous population sizes, resource bases and demography can be utilized in testing several new hypotheses of cultural change and processes (cf., King 1974, Fredrickson 1974).

One of the most important sites within the Inventory Area for which we currently have some information is the Squaw Creek site. This site, which contains large quantities of datable charcoal as well as diagnostic and other artifact types, has already yielded evidence of a more-or-less unbroken sequence of occupation beginning at least 7000 years ago. The site is located on U.S. Forest Service land so that the liklihood of destruction or loss of the resource has been minimized. Nevertheless, an effort should be made to link the early Squaw Creek materials with Edwards' (1970) Early Millingstone Phase components from Thomes Creek and the Borax Lake Complex materials from the Borax Lake Site (Harrington 1948, Meighan and Haynes 1970), all of which appear to contain roughly equivalent assemblages.

These materials should then be examined in relation to the hypotheses concerning early northern California occupation contained in the unpublished report by Chartkoff (Chartkoff, Miller and Johnson n.d.). In this paper, the authors suggest that the early occupation of northern California focused not on the valley floor but on the foothill zone by virtue of its greater food resources in a pre-acorn economy. Only later did the foothill populations segment and begin to occupy the valley floor in significant numbers. Test implications for the Chartkoff model include the following : (1) manos and milling stones should

appear early in the foothills and adjacent areas, and, where the chaparral plant association persists, these tools should also persist archaeologically; (2) the foothill areas should evidence relatively extensive and intensive occupation prior to the appearance of major settlement within the valley or flood plain areas; (3) the valley or flood plain areas should experience population growth followed by or coupled with environmental readaptation; (4) early sites located within the valley region should reflect an early involvement with plant species common to the foothills and flood plains; over time, the foothill sites should show relative continuity in the species being exploited, although the flood plain sites should show an increasing involvement with aquatic and other locally abundant species; (5) early sites should reflect rather generalized core/flake tool industries for both foothill and flood plain sites with increasing divergence in the tool kits from the two areas through time; the valley sites, representing the latest area of exploitation but containing a greater variety of previously unexploited resources, should reflect relatively greater change with respect to technology than the foothill sites.

Based on data available at the time, the Chartkoff model of early occupation and subsequent culture change appeared substantiated. The earliest sites for the valley (the Wurlitzer and lower levels of Llano Seco) both indicated a land mammal orientation based on deer and rabbit, while aquatic species were represented primarily by permanent resident species, such as suckers, which occur in low densities. Within Protohistoric period sites, on the other hand, anadromous fish, migratory waterfowl, and freshwater mussels were all being heavily exploited. From these data, the authors inferred that a successful adjustment had been made to the rich but specialized resources of the riverine environment by flood plain communities, leading to population growth and ultimately to denser and more complexly organized populations. Unfortunately, neither the Wurlitzer nor Llano Seco data have been published. However, subsequent reported excavations within the valley have produced some evidence which supports the general premises contained within the Chartkoff model.

South and west of the Squaw Creek site, excavations within the French Gulch area have highlighted several research problems or objectives, most of which are basic but nevertheless essential to a preliminary understanding of

local prehistory. Included are questions related to prehistoric patterns of site placement in time and space, prehistoric dietary habits and economic pursuits, and the need to attempt to ascertain the cultural affinities between sites within the Clear Creek drainage area and those in adjacent areas. The kinds of archaeological data needed to address the problems of cultural affinity include an expanded site inventory, accurate absolute dates for sites and site components, archaeological definitions of linguistic groups and determination of their boundaries. Thus far, a side-notched projectile point type which may prove to be positively correlated with the northern Wintu ethnographic area has been noted by Johnson (Johnson and Skjelstad 1974), and subsequently named the Whiskeytown Side-Notched form (Johnson 1976). The form was also noted by Jensen (1977) during excavations northeast of French Gulch along a major tributary of Clear Creek. Jensen's discussion represents a continuation of the efforts initiated by Johnson to provide data for archaeological identification of the geographic boundaries of a linguistic or ethnic group.

South of the Redding area, along the middle course of Cottonwood Creek and its major tributaries, future excavations in conjunction with construction of the Tehama and Dutch Gulch reservoirs are expected to produce extremely valuable information concerning northern California prehistory. The general area has been studied by at least three ethnologists who attempted to reconstruct the major outlines of the traditional way of life which existed there prior to the arrival of Euroamericans. Kroeber (1925), Merriam (1955) and especially DuBois (1935) have all attempted to record the way of life of several local groups to the extent that living informants possessed useful information. Of particular importance is the fact that the Cottonwood Creek Drainage Basin coincides quite closely with the boundaries of a single ethnographic sub-group of the northern Wintun Indians -- the Bald Hills Wintu. It is anticipated, therefore, that the archaeological research contemplated for the region can at least proceed under near optimal conditions: (1) the archaeologists should find quite valuable the traditions derived from native informants and other documentary sources of the contact period when used as starting points for attempting to reconstruct and interpret certain portions of the unrecorded past; and (2) the available ethnographic information may allow us to understand more thoroughly the impact on prehistoric settlement

and economic patterns of Euroamerican intrusion into the area as pre-contact period archaeological materials are compared with post-contact archaeological findings and ethnographic data.

But even the ethnographic data available for this portion of the northern Sacramento Valley will not solve all the problems for the archaeologists. There is not, for example, unanimous agreement concerning the boundary separating the Bald Hills Wintu from the Nomlaki. Kroeber (1925:354-56), for instance, places Dry Creek and the South Fork of Cottonwood Creek (i.e., Tehama Reservoir, the southernmost of the two proposed reservoirs on Cottonwood Creek) within Nomlaki territory, with the Middle Fork of Cottonwood Creek marking the approximate boundary separating the Nomlaki from the Wintu. Merriam (1955:27-9), on the other hand, extends this boundary southward to just north of Thomes Creek, thereby including both Dry Creek as well as the South Fork of Cottonwood Creek within the ethnographic area of the Bald Hills Wintu. DuBois (1935: Map 1) agrees with Kroeber, however, and draws the boundary between the Wintu and the Nomlaki at a point just south of Beegum Creek and the South Fork of Cottonwood Creek, thereby eliminating the Tehama Reservoir sites from inclusion within Bald Hills' territory.

At this point it seems reasonable to operate under the assumption that most of the Tehama Reservoir area lies within Nomlaki territory while most of the Dutch Gulch Reservoir area lies within Bald Hills Wintu territory. It will be an interesting, although archaeologically difficult task to attempt to resolve the Kroeber/DuBois versus Merriam controversy utilizing archaeological data from the region. However, there is already some apparent differences in site density and site size between the two reservoir areas which may relate to differences in settlement between the Nomlaki and Wintu, as already discussed in the Prehistory section of this report.

The particularly large number of individual sites located along the Middle Fork of Cottonwood Creek within the Dutch Gulch Reservoir area poses additional interesting questions. Shall we assume that all or nearly all of these sites were occupied simultaneously? If this were true then we would have also to assume that the Wintu were relatively recent arrivals to this part of northern California, an assumption which is in itself not so distressing except that

it leaves unanswered the question of who lived in the Cottonwood area before them and where are their sites. Moreover, simultaneous occupation of all or most of the Dutch Gulch sites would imply that the Wintu occupied the same sites for several centuries but did not accumulate midden sizes which would support this notion.

Also, it seems clear that the population density represented by the total number of Dutch Gulch Reservoir sites could not have been supported within this area given the fund of knowledge and the technological know-how of the Wintu Indians. Even if we assume that the Wintu returned to the vicinity of the Sacramento River during the winter months, which they apparently did, and occupied the Dutch Gulch (and Tehama?) reservoir sites only during the summer, we might still be dealing with a population size and density larger than could be supported by the resources available from the Sacramento River area even assuming year-after-year of optimum acorn and salmon production. We could argue that the seasonally heavy resources available along the Sacramento River (acorns and salmon) were augmented with the food products collected from a much larger area, such as the slopes of the Coast Range. However, we have as yet no evidence that the Bald Hills population was going this far afield for its summer collecting.

If we assume that only a few of the sites located along the three branches of Cottonwood Creek and Dry Creek were occupied simultaneously, as opposed to most of them being occupied all at once, then it might be argued that aboriginal occupation within the area was of long duration and perhaps also of substantial stability, especially if it can be demonstrated that the sites are largely internally homogenous. And if this is true, then it would appear that the Wintu and their predecessors may have maintained a near-optimum population level in relation to the technology available to them and the application of that technology to available food resources.

From this discussion of Wintu settlement along Cottonwood Creek, we may offer the following general conclusions and recommendations. First, given the excellent preservation of sites within the Cottonwood area, it should be possible to approach the study of prehistoric patterns of seasonality and resource scheduling through (1) more intensive studies of the local environment, and (2) linking archaeological and environmental data with the excellent

ethnographic information available. Second, however, it is equally clear that we need considerably more information about per capita protein availability within the Cottonwood area if we are going to be successful in estimating population density at various times in the prehistoric past; this endeavor will, in turn, require reasonably accurate paleo-botanical reconstructions for the region.

In some important ways, archaeological research in Northeastern California has proceeded farther than research within other parts of northern California located within the Inventory Area. There seems to be several related reasons for this. First, it is clear that much of Northeast California has benefitted from research undertaken within the Great Basin which in turn has been the focus of intensive archaeological activity for a relatively long period of time. The link with the Great Basin is based on the fact that several of the cultural patterns manifest within Northeastern California are Great Basin in derivation and/or affiliation (cf., McConnell's work in Surprise Valley).

Second, the recent work by Johnson (1969) and Grayson (various) at Nightfire Island is in part a continuation of investigations in southern Oregon which were initiated by Cressman more than three decades ago. The sequences which Cressman and subsequent workers established for this area have been useful guides to researchers working in northernmost Northeast California and have provided the basis for advancing their understanding of prehistoric developments beyond the evidential limits of the data available for other parts of northern California.

Third, recent Northeastern California investigations have benefitted from Kowta's efforts to develop a comprehensive research design for the region (Kowta 1975a). Kowta's research design includes a series of hypotheses which pertain to prehistoric culture history, population movement and chronological sequence within Northeastern California, and is coupled with a series of test implications relevant to these hypotheses. In addition, Kowta has outlined a research strategy against which to evaluate already completed archaeological work as well as planned projects and/or undertakings.

Since Kowta's paper is available to interested scholars, it is not necessary to include here an extensive review or

summary of his work. However, a brief paraphrasing of the essential features of his several hypotheses and test implications would be useful.

According to Kowta's model, prior to about 3000 B.C., the northern California foothills were occupied primarily by Hokan-speaking groups characterized by a hunting and gathering economy and who relied heavily on the exploitation of hard seeds but not the acorn. The milling stone and mano rather than the mortar and pestle were their primary grinding implements, with utilization of the valley floor/flood plain environments being minimal and sporadic. Prehistoric manifestations of this period of occupation include the Borax Lake Complex which is dated to around 5000 B.C., and the basal levels of the Squaw Creek site which date to between about 4500 - 2500 B.C.

Sometime around 3000 B.C. Penutian speakers penetrated the sparsely populated portions of central northern California and preempted it for themselves. These groups were perhaps preadapted to a riverine/marshland type of environment, an adaptation derived from their prior occupation of similar environmental zones within southwestern Oregon. The Penutian intrusion probably involved either Miwok-Costanoan or Wintun groups, with the former, according to Whistler's (1977) recent linguistic analysis, being the most likely candidates for this time period. The archaeological manifestations of such a Central Valley intrusion include the Berkeley Pattern dated to around 3000 - 2500 B.C. and presumably correlated with initial Miwok-Costanoan occupation within the Bay Area, and the Squaw Creek data which indicate a stylistic break in projectile point forms at around 2500 - 3000 B.C.

Shortly after occupying the valley regions, the Penutians began exploiting acorns in significant quantities, perhaps adapting preexisting food preparation techniques which had been used in bitterroot cooking to the locally abundant acorns. Exploitation of acorns, in combination with efficient exploitation of other valley resources such as salmon, resulted in substantial population growth and subsequent expansion into the foothill areas and mountain meadows where acorn and salmon exploitation was also possible. This movement may have progressed gradually up the various canyons, or alternatively may have proceeded in a "leap frog" fashion with quick movement into favored areas such

as Big Meadows (Lake Almanor) and subsequent outward spread from such areas. Whatever the actual pattern or form of movement, Hokan speakers were apparently forced to relinquish traditional territories and were thus displaced into the more marginal zones where they were residing at the time of Euroamerican contact.

Shortly after circulation of Kowta's (1975a) general model of prehistoric population movement and distribution within northern California, Kenneth Whistler published (1977) a very interesting and useful analysis of Wintun prehistory which bears directly on all of the cultural areas contained within the present Inventory Area. Whistler's study was based on a systematic analysis of Wintun plant and animal vocabulary with a concomitant correlation with pertinent archaeological data for northern and central California. Whistler supports Kroeber's and others' earlier contention that Hokan-speaking groups were the first prehistoric occupants of northern California; however, unlike the Chartkoff-Miller-Johnson model of early occupation in which the foothill zones were identified as the most likely locale for the earliest non-acorn using populations, Whistler does not specify the occupational habitat of California's early Hokan groups. Whistler then notes that several Penutian groups, each of which originated outside of California within Oregon or the Great Basin, subsequently entered and occupied much of northern and central California. Whistler argues convincingly that there were not one but four separate entries by Penutian speakers into California, in contradistinction to Kroeber who had earlier argued that it was a Proto-California Penutian group which entered California in a single migratory wave and only then diversified and spread within the State. Whistler's reconstruction of Proto-Penutian would place the original Penutian split somewhere in the Plateau or perhaps the Great Basin (Whistler 1977).

According to Whistler, the earliest of the Penutian arrivals into California were the ancestors of the Miwok-Costanoans represented archaeologically within the Bay Area by the Berkeley Pattern which dates to about 3000 - 2500 B.C. This group is believed to have originated within the Basin or Plateau and to have brought with them an estuary adaptation as well as the mortar and pestle.

This initial migratory wave was soon followed by a split in the remaining group of Penutian-speakers which

included minimally Yokuts, Maidu and Wintun. The Yokuts entered Central California across the Sierras and spread south, probably along the foothills. During this same period, the Wintun group moved into Southwestern Oregon which Whistler identifies as the Proto-Wintun homeland. Precisely where the Maidu group resided during the period is not specified. In any case, the stage was now set for the next major population movement into California.

The major hypothesis with respect to this next major population shift relates the movement to a technologically advanced, riverine-adapted Algonquin people from the north. As Whistler notes (:bid.:13),

> These people are the most probable source of the bow and arrow and the simple harpoon in Northern California...These Algonquins probably came in two groups, the ancestors of the Yurok and of the Wiyot. The exact path they took may yet be determined archaeologically, but for now I view their most likely route to have been south up the Willamette Valley from the Columbia, across the Umpqua and Rogue River drainages and then coastward along the Klamath River. The Wintun, having adopted Algonquin-style technology, move rapidly into Central California, either through or skirting Shasta territory. The first group in, the ancestral Patwin, moves all the way south into and disrupting Miwok territory. Their most likely route is south along the Sacramento River.... It seems likely that the Patwin were the carriers of the so-called 'Augustine Pattern' apparent in the archaeological record [of about A.D. 500 in the Bay Area]. The disruption caused by Patwin intrusion thus appears to mark the archaeological development in Central California known traditionally as the middle/late Horizon transition and more recently identified as the beginning of the Lower Emergent Period [Fredrickson 1974].

Subsequent immigration into northern California was presumably related to movement among Athabascans who also entered from the north. Again quoting Whistler,

> Unlike the Algonquins, the Athabascans seemed more adapted to rough and forested country, and their

> entry was probably along the coastal ranges. They pushed into Yuki, Chimariko and Karok territory and isolated the Algonquin peoples now living at the mouths of the major salmon streams of California.... Meanwhile, the Wintun people were still expanding. In the north the Wintus expanded over the Coast Range divide into the upper Trinity drainage.

Lastly, the Maidu entry into northern California was unspecified in Whistler's model except as post-Wintun in age and originating somewhere within the Basin or Plateau areas.

In concluding his presentation, Whistler offers the following general conclusions and identifies several areas for future research:

(1) To Whistler it seems clear that the hypothesis of a California Penutian "kernel" is dead. It is inconsistent with the linguistic borrowing data, with expectations based on other historical linguistic principles, and with the cultural sequences implied and/or documented in the archaeological record. Thus, Penutian entry into California occurred in several stages and most likely from different directions;

(2) Investigations of the relation of Wintu to Northern Hokan languages in Northern California is crucial for unraveling the precise direction of and relative time at which movement of the Wintu into California occurred;

(3) Whistler emphasizes the recency of much of the cultural change within northern California, with a complete reorganization of the North Coast Ranges and the Sacramento Valley having probably occurred during the past 1000 years. Moreover, the recency of such change suggests that there exists recoverable linguistic as well as archaeological data for these events, a fact of importance to all future archaeological research within the region;

(4) Lastly, a linguistic analysis similar to that conducted of Wintun could be profitably undertaken with Maidu; such an analysis should be coupled with an interpretation of Maidu prehistory designed to show connections either with the Basin or with the Central Valley. Such a joint effort would clarify the direction from and the relative time at which the Maidu arrived in their contact territory.

Within one year following publication of Whistler's provocative paper, Kowta (1978) decided to follow through on some of the research needs which Whistler had outlined. Rather than undertaking a linguistic study similar to Whistler's, however, Kowta elected to examine Whistler's (as well as Kroeber's and the Chartkoff-Miller-Johnson) model of population movement and migration using data available within the University of California Culture Element Distribution list.

From Veogelin's 1936 list, Kowta selected data for the Shasta, Atsugewi and Achomawi as representing Hokan-speakers within the study region of northern California, and for the Wintu, Maidu and Nisenan as representing Penutian-speakers. The results of tabulating shared traits between the various groups considered are presented in Figure 5 (below). The numbers in adjacent cells in the figure represent the percentage of the total number of paired similarities recorded between each of the groups which was derived by comparing each group to each of the other groups for each trait selected from the list.

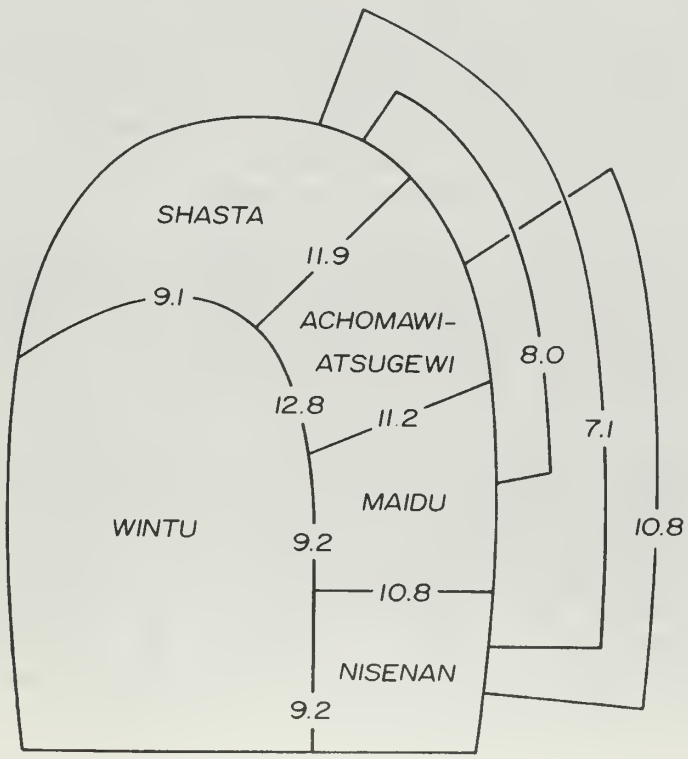


Figure 6
(After Kowta 1978)

Percentage of paired similarities of culture elements in The North Valley.

Assuming that the distribution of pairing percentages was not due to chance, Kowta notes that the observed values could have derived from (1) proximity, (2) ecological factors, (3) linguistic factors, (4) length of contact period between the various groups, or (5) some combination of the four. The various observed values were examined in light of each of these possibilities, followed by a review of a portion of the available archaeological data for northern California. Kowta concluded that with some modification the Whistler model of early Penutian intrusion into California seems "most amenable...for a reasonable fit." Moreover, the available archaeological data for the region do not contradict the major premises contained within the Whistler model. Specifically with respect to the archaeological data, Kowta notes the following:

1) The Borax Lake Complex, dated to around 5000 B.C., seems to represent early Hokan-speakers in north-central California, while the basal levels of the Squaw Creek site may represent such occupation within northernmost California.

2) The Squaw Creek site also contained a stylistic break in projectile point forms at around 2500 - 3000 B.C. and again at about 1000 B.C., which seem to coincide with the introduction of the Northern Side-notched projectile point, thus conforming with Whistler's hypothesis of Algonquin influence at this early time period. The earlier of the two Squaw Creek projectile point breaks would presumably be correlated with the Miwok-Costanoan intrusion and the latter with the Wintun intrusion.

3) Within the Chico area, the early occupation of the valley floor, tentatively dated to about 2500 B.C. (based on unpublished data from the Llano Seco site), may represent Miwok-Costanoans rather than the Wintu or Maidu who occupied the region at the time of contact.

4) Within the Oroville Locality, the Messilla Complex, tentatively dated to about 2000 B.C. and which evidences a hard-seed economic orientation, may be identified with Hokan-speakers or alternatively with Penutian-speakers in close contact with Hokan-speakers. Maidu occupation of the region would extend back through the Oroville and Sweetwater complexes to about A.D. 1000, a date which fits comfortably with Whistler's notion of a fairly late Maidu entry separate from the earlier Wintu penetration of the area.

The only anomalies between the data provided by Kowta and the model presented by Whistler lie in the following correlations:

1) The high value between Wintu and Achomawi/Atsugewi. However, if we allow for a long Wintu occupation within the Pit River area prior to their movement out onto the valley floor, the apparent contradiction can be accomodated;

2) The relatively high value between Maidu and Achomawi/Atsugewi;

3) The relatively low values between Maidu and Wintu and between Nisenan and Wintu, and

4) The relatively low value for the Wintu-Shasta relationship.

For anomalies numbers 2 and 3, however, we could also suggest a long Maidu occupation within the Pit River area, a concurrent separation from the Wintu group, followed by subsequent movement into their present territory and eventual re-contact with the Wintun group; this, as Kowta points out, would allow us to accomodate the Culture Element Data within the model of movement proposed by Whistler. This, then, leaves us with only item #4 unexplained.

The Whistler model and the ethnographic data presented by Kowta would thus point to the Pit River area as a key area for future intensive research (Kowta 1978). The minimal data requirements will have to derive from excavation of single and multiple component sites, accurate chronometric dates as well as relative age estimates based on cross-typing artifact categories, correlation of diagnostic implement types with particular ethnic or cultural groups, and reasonably accurate reconstructions of group boundaries at various times in the prehistoric past. The task is monumental, but sufficient data are available within the region to enable northern California to make dramatic contributions to regional prehistory and to anthropology as a whole.

Northern California Archaeology as a Public Resource

In addition to its scientific/research value, the archaeological resource within northern California can enhance the region as a public, recreational resource. On-going archaeological excavations could be made an integral part of the Bureau of Land Management's efforts to create and encourage greater respect for and enjoyment of prehistoric remains located within BLM-administered portions of the Inventory Area. Indeed, such a precedent was established in the summer of 1977. At that time a required mitigative excavation program on BLM land not only yielded significant scientific information, but in addition was made accessible, through the efforts of BLM archaeologist Clark Brott, to interested BLM employees, some of whom had never even seen a prehistoric site let alone on-going professional excavations. Having witnessed the painstaking activities associated with professional archaeology, most casual observers acquire a new appreciation and respect for archaeological resources which they might otherwise unkowingly damage or destroy. Moreover, the general public, the ultimate source of funds for archaeological projects on public lands, will undoubtedly be much more willing to support additional future projects if the activities are more visible, hence more "real", and particularly if the results are made available to them through BLM and other publication efforts.

Of the archaeological sites occurring within the Inventory Area, those with visible surface indications of past cultural activity are perhaps of most general interest to the public and can best be utilized for interpretive displays within controlled access areas. Such sites include rock shelters, midden sites with house pit depressions, defensive rock walls and rock circles frequently encountered within Northeastern California, and petroglyph and pictograph sites.

However, while the potential uses of cultural resources for the public benefit and for recreation are numerous and varied, it should be emphasized that only a very few of the sites within the Inventory Area are located within areas where controlled access can be maintained, and only under such conditions should interpretive displays be contemplated.

The rate of population influx into northern California and the level of development which this part of the State has witnessed in recent years also represents a potentially

disastrous threat to the archaeological record. Urban development can be blamed for a tremendous loss of prehistoric material during the past ten years, particularly within the Redding area. In addition, the expanding recreational use of much of the backcountry areas has exposed many regions to increased levels of vandalism and unauthorized artifact collecting. Moreover, recreational development has been accompanied by increasing use of a variety of versatile vehicles which disturb land surfaces, scatter fragile surface sites, increase the rate of erosion which accelerates the natural attrition of sites, and generally increase the territorial range of recreational enthusiasts.

It is clear that large tracts of non-government land located within the Inventory Area will be developed during the coming decades, and that some governmental lands will see increased recreational facilities development. This situation could prove to be a positive step in protecting the archaeological resources of the region, or it could result in significant adverse impacts. The exchange of land from Federal to private ownership as well as the development of recreational facilities on existing government lands must proceed in accordance with Federal environmental protection laws which confer considerable protection to archaeological resources when Federal agencies follow them in good faith. However, in the case of private development, the level of compliance with Federal standards of resource protection has been something less than desirable. But in both cases, if appropriate planning and necessary mitigation does not precede construction and development, the level of site destruction and disturbance may very well make impossible the study of the more sophisticated research problems envisioned for the region. Unfortunately, the obstacles preventing timely and appropriate mitigation of sites are major ones which are the same for both government as well as private developments: insufficient funds and/or lack of appropriate planning in which the best use is made of the limited funds which are available.

Management and Planning

It would be fairly easy to point out some past governmental as well as private actions which have led to significant losses of cultural resources information from portions of the Inventory Area. However, realistic and workable solutions to the problems surrounding destruction of these non-renewable resources are less obvious. While an appropriate master plan for resource development, management and protection for each area within a region as large and culturally complex as the present Inventory Area cannot be accomplished within the time and budgetary constraints of the present project, a number of suggestions can be offered.

An initial consideration in any resource management and planning strategy is the adequacy of the existing resource inventory. As part of the present project, a compilation has been made of all sites currently recorded on or within approximately one mile of BLM-administered land within the Inventory Area (Appendix A). The site location data was recorded on a single set of topographic maps supplied by and delivered to the Redding Office of the Bureau of Land Management as well as in tabular form in Appendix A. These data include records which have been secured from the Robert Schenck Archives, San Francisco State University, the University of California Archaeological Survey, the State of California, Department of Parks and Recreation, the U.S. Forest Service and Bureau of Land Management, the Army Corps of Engineers, the Pacific Gas and Electric Company, private records which have been submitted to the Clearinghouse of the Society for California Archaeology, Chico, and the master record files of the District 2 Clearinghouse of the SCA.

It is beyond the scope of the present project to examine each of the recorded sites in order to assess the accuracy of locational and other recorded data. However, based on past experience within northern California, it appears that post-1970 site record forms contain more detailed site information and reflect more accurate map placement than pre-1970 site record forms, with possibly as many as 10% of these pre-1970 site record forms containing inadequate and/or erroneous locational information. Ammendments to some of these earlier site forms have been incorporated into the records maintained by District 2 of the Society for California Archaeology. Again, however, few of these sites have actually been revisited since original recording, and we must assume that some unspecified

number of inaccuracies exist. Hopefully these problems will be partially corrected through continued archaeological survey contracted for and/or conducted by the Bureau of Land Management.

Above and beyond the problems which exist with current site record documents are problems related to the rationale and sampling strategy employed during most previous surveys on BLM and other Inventory Area lands. While some archaeologists in the past have used statistical sampling strategies both during survey as well as in the excavation phase of fieldwork, most researchers, it would appear, proceeded more on the basis of "hunch" and "feel." And in those cases where some sampling strategy was used to select survey areas, there is very seldom any mention of the sampling criteria employed or the research objectives for which the particular sampling strategy had initially been designed. The consequence of these facts is that there are perhaps no more than a few square miles within the Inventory Area for which we have an inventory of archaeological contents which is adequate for long-term planning of use and development.

The benefits to be expected from application of a program of statistical sampling of various regions within the Inventory Area are manifold, particularly in light of the need to project patterns of site location and densities during long-term planning of use and development. At an elementary but nevertheless very important level, a program of statistical sampling allows reconnaissance of areas which go beyond "hunch" sampling wherever survey areas are often determined by the location of good roads, clearing, or other factors related to contemporary accessability. In addition, such an approach eliminates hidden bias in the form of differential attention paid to ecological situations which the investigator "feels" may have been preferred by the prehistoric inhabitants within particular regions. Beyond this, however, the demands imposed by current standards of archaeological research require that outmoded methodology be cast aside when approaches are available which can produce greater replicability and reliability. As numerous researchers have pointed out, a statistical sampling survey and inventory strategy possesses the ability to predict, within definable limits of error, the total number of sites within a given survey area based on a sample size as small as 10% (cf., Jensen 1978).

It is probably safe to conclude that funding for a complete archaeological inventory of BLM-administered lands located within the Inventory Area is a remote possibility at best. But while many regions within the Inventory Area will not be completely investigated, at the very least a limited inventory program is needed which will be capable of yielding projections of patterns of site location and densities within the region. As noted above, the only reasonable method for achieving the level of prediction required for adequate long-term as well as interim planning is through implementation of a program of statistical sampling. The following outline summarizes the steps which will be necessary for development of such a long-term inventorying program by the BLM.

1) Definition of the Sampling Universe and its boundaries on maps and, preferably, on the ground. Map 1 of this report depicts the Inventory Area in relation to geomorphic provinces as well as cultural units. However, the Inventory Area is not coterminous with BLM lands so that the present map would have to be supplemented with an additional map on which BLM territory is demarcated.

2) The Sampling Universe, once defined, will have to be divided into useful inventory areas, due to the large size and complex makeup of the region. Such a division could be made in terms of ecofactual criteria or cultural data, or some combination of the two. The purpose of this division would be to assure good spatial distribution of the actual sample which will eventually be achieved as well as to insure that significant portions of land are examined which pertain to selected variables which undoubtedly influence past land use and occupation.

3) The several smaller inventory areas should be further stratified on the basis of more particular and detailed criteria. Nevertheless, the purpose of stratification is equivalent to the rationale employed in establishing the several inventory areas: first, to assure good spatial distribution of the eventual sample, and second to make certain that significant portions of land pertaining to selected variables are examined. The several strata may be selected in relation to variable features of vegetation, hydrology and physiography, each of which might be further subdivided on the basis of inventory area-wide correlations. The inventory areas and sampling strata defined for each should also be located on master maps.

4) The next level of decision-making will involve the choice of sample size, or sample fraction. At this point, the primary question will be, "How many elements must be drawn from a given Sampling Universe or inventory area to achieve valid conclusions concerning the entire research area?" Since the sample size is frequently expressed as a fraction (or percentage) of the number of selected elements divided by the number of elements in the population, the term sample fraction is frequently used in this context. In any case, there is no magic about selection of a sample size adequate for a particular task or region. In some areas it may be possible to employ a sample size of 1% to demonstrate that site frequency differs considerably in "X" number of ecological zones; in other cases a 50% sample may be necessary to reconstruct settlement patterns within particular regions. A number of variables must be simultaneously considered in selecting a sample size adequate for a particular research problem.

5) The selection of sampling unit represents the next level of decision-making. Sampling unit refers to the size and shape of the space enclosed by such a unit. In some cases, for example, it may be advantageous to employ transects in estimating populations of items (e.g., sites), while use of quadrants may be more beneficial for association studies. It has been suggested by some researchers that sampling precision increases in inverse proportion to the size of the sampling unit, although the jury is still out on this issue.

6) The next step will be to randomly select sampling units for survey in a manner which is compatible with the requirements of the strata defined, the sample size selected and the sampling units employed.

7) The sampling program should also include a method for determining the existence and extent of various non-sampling errors which might be introduced at several points throughout the process, as well as a method for evaluating the statistical reliability of the results. It is expected that some adjustments in the strata divisions, sample fraction, sampling unit definition or some combination of these variables will be needed as the overall sampling program is adapted to individual inventory areas and as the results of initial survey projects are analyzed and evaluated.

While the statistical sampling program constitutes a major component in successful long-term planning of use and development within the Inventory Area, there is also a need for a complementary approach linked to more immediate needs. To put it another way, the Bureau of Land Management is faced with a number of short-term needs which require an interim management plan. Such a management plan may involve intensive, systematic survey of or excavations within areas which are currently under heavy impact which cannot be redirected, such as the current unauthorized collecting and looting taking place at site CA-SHA-491, the Kett Site. In addition, there are some areas to which intensive interim management or development might serve to channel impact and thus reduce the pressure on more sensitive regions. Moreover, if the interim program is developed and conducted in such a way as to be congruent with the sampling divisions conceived for the long-term inventory program, then the interim surveys and test excavations will also provide the BLM with data against which to measure the effectiveness of its on-going long-term statistical sampling program.

In summary, the management and planning program for the Inventory Area should consist of two primary components. First, a long-term program of statistical sampling of particular regions within the Inventory Area should be designed to produce site recovery results which closely approximate or reflect the real site universe within the entire study area. Second, a short-term or interim archaeological program compatible with the objectives of the long-term program should be initiated. This short-term program should have as its primary objective immediate protection and management needs. Thus, in effecting its short-term objectives, this interim program would (1) be defined with study unit boundaries congruent with the parameters established by the long-term program, (2) involve systematic evaluation of archaeological resources only within areas so defined, and (3) attempt to encourage projects of sufficient scope to qualify as useful and productive research undertakings. Systematic evaluations undertaken should be followed by positive action in the interim program, and might involve either closure of areas, fencing of sites or mitigation programs if no other alternative exists to the continuing destruction of the archaeological record.

The need for the recommended long- and short-term

programs derives from the fact that our present rate of knowledge acquisition and level of success in site preservation are both exceeded by the rate at which irreplaceable information is being lost. As noted earlier in this Chapter, the potential importance of the archaeological resources within the Inventory Area derive from both their scientific as well as public values, neither of which are being maximized at the present time. None of this is by way of criticising the Bureau of Land Management for its handling or treatment of the large number of cultural resources included within its domain, for areal archaeologists are cognizant of the many management problems facing the Bureau and the budgetary constraints under which that public agency must operate. At the same time, it is clear that it is necessary to move now in recommending more stringent protection and more structured evaluation and research programs for these non-renewable cultural resources.

ENDNOTES

1. In a recently published book entitled The Ancient Californians (Natural History Museum of Los Angeles County, Science Series 29, May 1, 1978), Emma Lou Davis has reversed this east-west hypothesis, suggesting that Clovis represents an eastern technological flowering of the earlier Western Lithic Co-Tradition (The Western Lithic Co-Tradition, by E.L. Davis, C.W. Brott, and D.L. Weide, San Diego Museum of Man, Museum Papers No. 6, April 1969). Davis (1978:1) offers the following summary of her theory of PaleoAmerican migration into and occupation of western North America:

> 1. For the past 40,000 years, the Lakes Country, an intermontane western corridor, was at times a cold steppe and xeric woodland. During such optimal periods, it particularly was a suitable habitat for human foragers, and for a Rancholabrean fauna of large herbivores, which supplied a part, but not the balance of the people's subsistence.
>
> 2. During Classic Wisconsin glacial maxima (22,000 - 12,000 BP), there were no Great Plains as they recently have been known. That country east of the Rockies was occupied by boreal forest, sand dunes, parkland and tundra -- a habitat less desirable than the Lakes Country.
>
> 3. Therefore, it is suggested that there were intervals when both migration and cultural evolution of PaleoAmericans occurred in the very far West -- coastal California and the Lakes Country Corridor. Within the latter, Lake China Basin now provides a laboratory for comparative studies.
>
> 4. Population numbers and cultural diversity increased with time, so that by 15,000 years before the present, the Great Basin probably was culturally and linguistically complex and many different groups of people had long since spread through Central and South America.
>
> 5. In Lake China Basin, a technology of broad pressure flaking rather suddenly replaced irregular percussion. Thick, ovate bipoints and cordiforms

were supplemented by a new tool -- long, lanceolate knives with a single, weak shoulder and multiple, basal flutes. These changes appear to have taken place between 14,000 and 12,000 years ago, a Proto-Clovis Phase.

6. After the present microcyles of drying commenced about 11,000 years ago, a number of events rapidly shaped prehistoric events in the Lakes Country. Proto-Clovis lithic and hunting technologies evolved into Classic Clovis marking a climax of population, hunting activity, butchering techniques and lithic virtuosity; at the same time, boreal forests east of the Rockies were being replaced by grasslands.

7. For these ecological reasons, Clovis hunters and the last of the threatened megafauna drifted south-eastward around the Continental Divide and then north into the opening ranges.

8. These propositions, if substantiated by continued field work, would account for the sudden appearance of Clovis technologies east of the Divide and the apparent long development of these cultural manifestations in the basin of Pleistocene Lake China.

2. Brott and Dotta have recently presented a paper on the same subject (Clark Brott and James Dotta, "New Problems and Hypotheses in Dealing with the 'Archaeolithic Tradition': Evidence from the Southern Cascades," paper presented at the 1978 annual meetings of the Society for California Archaeology). The paper constitutes a review of existing pertinent published and unpublished literature dealing with PaleoAmerican occupation within Northern California and includes a review of known sites, hypothesized site types and a discussion of the geomorphological contexts within which the various site types should be found.

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