TRAILS, TRIBELETS, AND TERRITORIES: THE ETHNOGRAPHIC, PREHISTORIC, ARCHAEOLOGICAL, AND MANAGEMENT CONTEXTS OF THE INDIAN VALLEY/ WALKER RIDGE RECREATION AREA

by

Evan B. Elliott

A thesis submitted to

Sonoma State University

Rohnert Park, California,

in partial fulfillment of the requirements

for the degree of

MASTERS OF ARTS

in

Cultural Resources Management

Adrian Praetzellis, Ph.D.

Alexis Boutin, Ph.D.

Christopher Lloyd, M.A.

23 November 2011

Date

AUTHORIZATION FOR REPRODUCTION OF MASTER'S THESIS

I grant permission for the reproduction of this thesis in its entirety, without further authorization from me, on the condition that the person or agency requesting reproduction absorbs the cost and provides full and proper acknowledgement of authorship.

Date: 11/23/2011

Signature

592 The Alameda

Street Address

Berkeley, CA, 94707

City, State, Zip

TRAILS, TRIBELETS, AND TERRITORIES: THE ETHNOGRAPHIC, PREHISTORIC, ARCHAEOLOGICAL, AND MANAGEMENT CONTEXTS OF THE INDIAN VALLEY/ WALKER RIDGE RECREATION AREA

Thesis by

Evan B. Elliott

ABSTRACT

Purpose:

This thesis synthesizes extant information relating to the prehistory of the upper Cache Creek watershed that helps to contextualize prehistoric cultural resources in the Bureau of Land Management Indian Valley/ Walker Ridge Recreation Area (IV/WRRA), Lake and Colusa Counties, California. The purpose is to create an inventory document that provides cultural resource management practitioners and land managers with an informed basis for understanding the study area in terms of the cultural resources, their environment, land use in the past, and the need for further work.

Methods:

Archival, literature, and geographical information systems research was conducted to: (1) integrate ethnographies of the Hill Patwin to provide context for interpretation of prehistoric cultural resources; (2) synthesize the regional prehistories of the southern North Coast Ranges and the Sacramento Valley; (3) determine the location and the scope of previous archaeological surveys and archaeological sites within the IV/WRRA and vicinity; and (4) investigate management obligations and create recommendations for the management of cultural resources within the IV/WRRA.

Findings:

The IV/WRRA and surrounding area was not simply a backwater located between two more populated and culturally elaborate regions. It had a large native population with multiple sociopolitical groups and contained a portion of the extensive exchange network that connected the Pacific coast, the Clear Lake basin, the Central Valley, and the Sierra Nevada. This makes it an excellent locale for the study of cultural transmission between these regions.

Conclusions:

The upper Cache Creek watershed was a locus for cultural exchange between the Clear Lake basin and the Central Valley, and between the Pomo peoples and the River Patwin. The prehistoric inhabitants, the Hill Patwin, were tied culturally and socially to both groups and culture regions. Greater inclusion of the Hill Patwin into the North Coast Ranges cultural region and viewing them as the locus for the movement and transmission of cultural practices and elements between these two regions provides a better basis of analysis of the late prehistoric era of the area. Social boundary studies and material culture studies are two avenues of research that can greatly contribute to the understanding of the social dynamics of the region. Many aspects of material culture can be examined to look at the similarities and differences between these different groups and the ways that these characteristics may have been passed through this region.

Chair: Adrian Practeller Date: 11/23/11
Signature

MA Program: Cultural Resources Management
Sonoma State University

This work is dedicated to my father, Lloyd, who not only took me to my first archaeological sites, but also made it possible for me to see so many more.

ACKNOWLEDGEMENTS

No work such as this is completed in a vacuum. Over the course of completing this thesis I have found myself standing on the shoulders of giants. Some of these are giants in our field; the great archaeologists, anthropologists, and linguists whose work made this thesis possible. Others are giants in my life, who helped carry me through difficult times and whose help was invaluable in the process of writing this thesis. I simply cannot thank any of these giants enough.

I would like to extend special thanks to my thesis chair, Adrian Praeztellis, for all the help he gave and all the work he did and all the encouragement along the this journey. Above that, I want to thank him for teaching me that simple language is the best language and I want to apologize for not always learning that lesson.

I owe so many thanks to my committee members, Alexis Boutin and Christopher Lloyd. Thank you for challenging me and pushing my research and writing in ways that I had not thought of.

Thanks to the archaeologists of the Anthropological Studies Center who helped during the entire process. Michael Newland was crucial at every step of the way, suggesting sources, providing layouts, helping me formulate my ideas, and editing and re-editing. Kate Erickson provided constant support, advice, and expertise.

This would not have been possible without the support and encouragement of Riva Elliott. Thank you for pushing me when I was stuck and helping maintain momentum when I was moving.

Thank you to Jessica Tudor for being the sounding board for all my ideas during those thousands of hours we spent together on the road commuting. I appreciate you so much for driving and talking about everything. I could not have done this without you. Thank you for all the support, and all the meals and favors you gave me. I hope to return them when you are in the same position.

Many thanks go to my cohort and fellow graduate students: Alden Neel, Jessica Tudor, Jules Evans-White, Pat Paramoure, and Stacey Zolnoski, as well as Angela Locke, Charlie Mikulik, and Ginny Hagensaiker. All the days and all the beers in the Pub helped me stay sane. Thank you for walking this path with me.

Finally, I would like to thank the Bureau of Land Management Ukiah Field Office for generously funding this project and making it possible.

CONTENTS

SECTIONS

FIGURES

I. INTRODUCTION AND PROJECT BACKGROUND

INTRODUCTION

This thesis is the culmination of research efforts produced as part of an ongoing cooperative agreement (Assistance Agreement No. L09AC15833) between the Anthropological Studies Center (ASC) at Sonoma State University and the Ukiah Field Office of the United States Bureau of Land Management (BLM). Under this collaborative arrangement, graduate students in the Cultural Resource Management (CRM) program are offered the opportunity to produce a professional report on various holdings managed by the Ukiah Field Office. BLM Archaeologist Christopher Lloyd requested a Class I Prehistoric Overview of the Indian Valley/Walker Ridge Recreation Area (IV/WRRA) that I produced under the guidance of ASC staff archaeologist Michael Newland. Research that went beyond the scope of the Overview is also included in this thesis.

A Class I Prehistoric Overview is a type of information inventory of all the known archaeological, cultural, and traditional places within a large area, specifically those resources that inform us about the prehistory of the area. The purpose of such an inventory is to provide CRM practitioners and managers an informed basis for understanding the study area in terms of the cultural resources, their environment, land use in the past, and the need for further work (US-BLM 2004:8110.21A.a). These documents are not simply a literature review, but are instead a synthesis of the existing

information concerning the environmental context, ethnographic context, prehistoric context, prior cultural resource research, and suggested management options and research directions (US-BLM 2004:8110.21A2).

The study area (Chapter I) is within the ancestral territory of the Hill Patwin. Several anthropologists conducted studies in the first half of the 20th century that describe ancestral use of this region by the Patwin. In addition, a handful of important archaeological studies have been conducted on different components of the prehistory of the IV/WRRA; this thesis summarizes the archaeology and ethnography conducted previously as a foundation for future archaeological study.

The archaeological research issues that are addressed in this thesis are focused entirely on prehistoric resources in and around the IV/WRRA. Historic-era resources are present in this area, but fall outside of the scope of this work. Ethnographic issues, resources, and data included here (Chapter II) are intended to bring context to the prehistoric resources and help us work towards potential interpretations. Frameworks for the cultural chronologies of both the Clear Lake basin and the Sacramento Valley presented in Chapter III lay out the generalized patterns of cultural development to place the archaeological resources in a larger regional context (Chapter IV).

The ethnographic data, combined with the environmental, geographic, and archaeological data, were used to reconstruct the tribelet distribution in the area (Chapter V) and some of the regional trail system (Chapter VI). Regional implications of the information on the area and on the Hill Patwin including cultural transmission,

cultural identity, and the relations between the Central Valley and North Coast Ranges cultural regions form Chapter VII.

The creation of this prehistoric overview was not prompted by any particular undertaking or development plan. Instead it is part of the BLM's objectives to promote informed management and preservation decisions concerning cultural resources and to provide opportunities for educating the public. The overview also is part of satisfying legal obligations outlined in Section 110 of the National Historic Preservation Act, as well as various internal BLM policies (Chapter VIII).

STUDY AREA LOCATION AND DESCRIPTION

The study area consists of approximately 49,600 acres of noncontiguous federal lands administered by the BLM that straddle the Lake County and Colusa County border. Situated several miles northeast of Clear Lake, the IV/WRRA is bordered by Bear Valley to the east, Wolf Creek and the Mendocino National Forest to the west, and California State Route 20 to the south (Figures 1, 2, and 3). It is surrounded by both public and private lands, notably the Mendocino National Forest to the north and west and the Cache Creek Wilderness Area to the south. The recreation area completely surrounds the Yolo County Indian Valley Reservoir. Also within the borders are private inholdings interspersed with the federal lands. The main recreational uses of the area are hunting, camping, bicycling, hiking, and horseback riding (US-BLM 2008; French 1977:1-2).

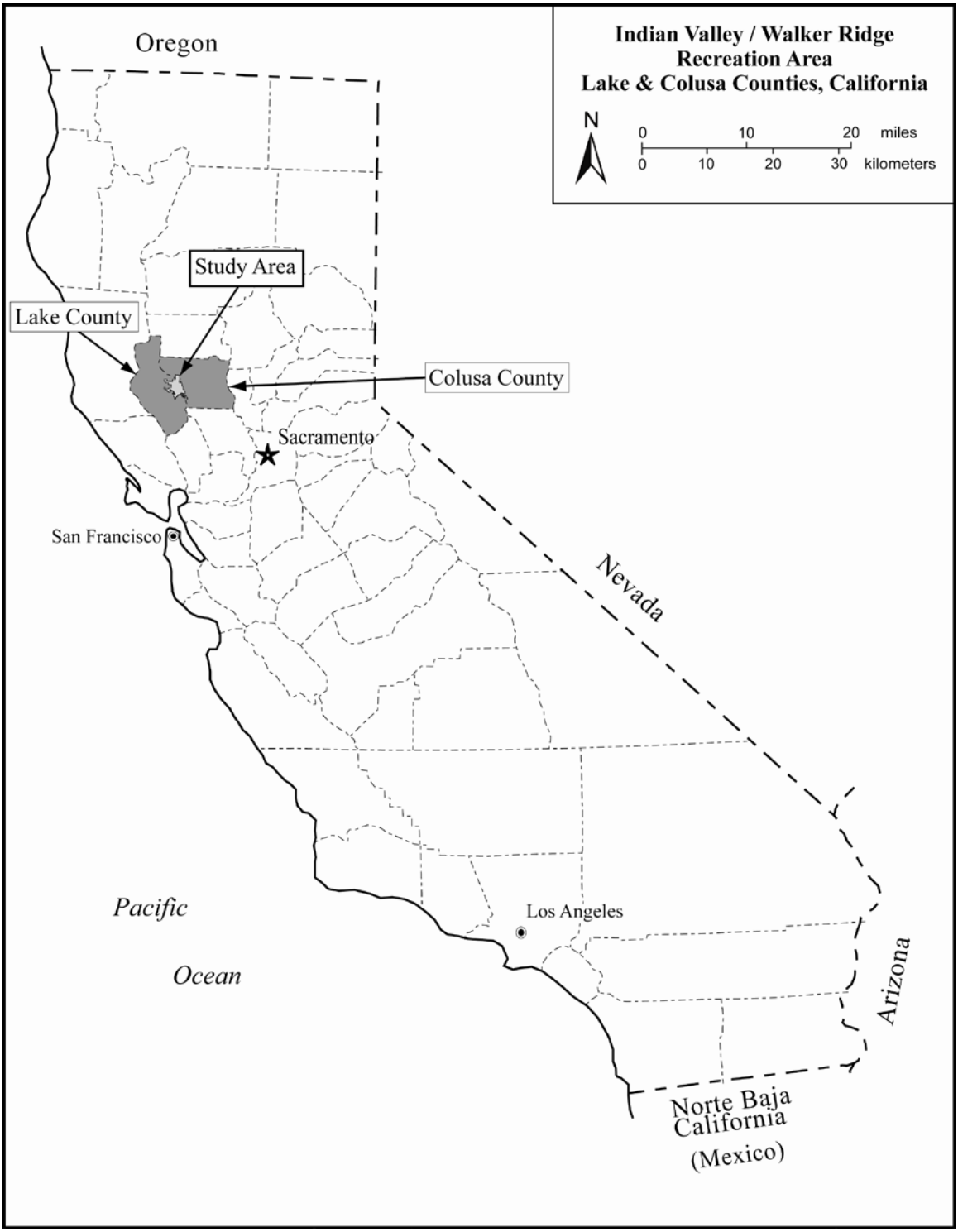

Figure 1. Project vicinity

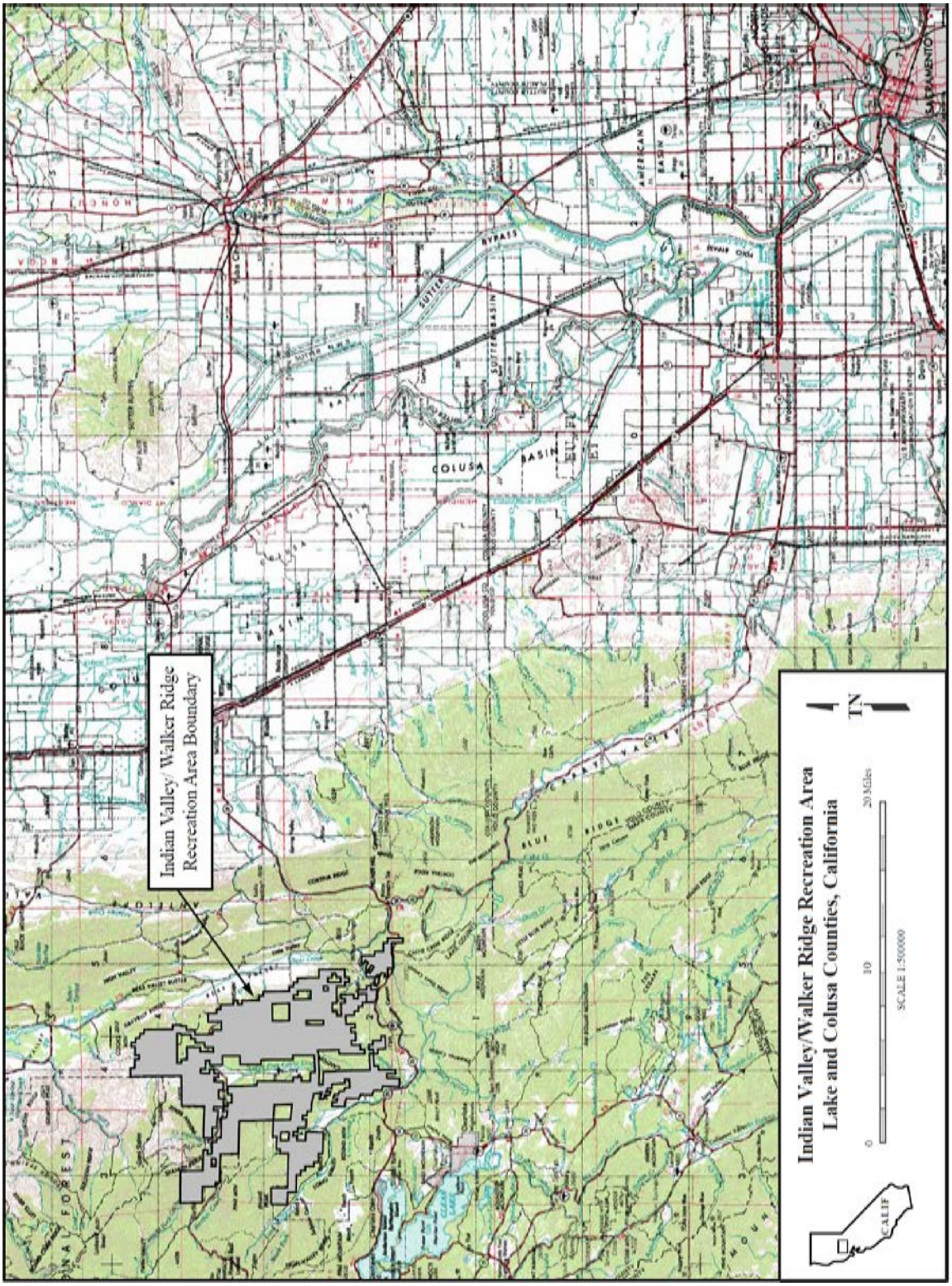

Figure 2. Study area

The terrain varies within the study area and is mainly composed of canyons, high ridges, and lower hills with the occasional terrace or smaller valley floor. The larger valleys in the area are all outside of the project boundaries. North of the Indian Valley Reservoir, the terrain is rough and ranges between 2300 ft. and 2600 ft. in elevation. The main streams are Stanton Creek and The North Fork of Cache Creek; these streams and all of the other nearby smaller watercourses drain into the reservoir. Between the reservoir and Walker Ridge, the slopes and canyons are quite steep and covered with thick vegetation (French 1977:1-2; National Agriculture Imagery Program [NAIP] 2009; Orlins 1971:16-23).

An exception to the steep topography is the area on the west side of Cold Spring Mountain, which is comprised of midslope terraces with a series of meadows and dense groves of gray pine and blue oak associated with Cold Spring and smaller springs. East of Walker Ridge, the terrain is irregular and gradually drops into Bear Valley. Bear Valley was much wetter prehistorically due to increased water retention before the natural rock restriction was dynamited (National Cooperative Soil Survey 2006:121). The elevation drops from a high of 3600 ft. at Cold Spring Mountain down to 2000 ft. along eastern boundary of the study area just above Bear Valley. The streams here drain eventually to the east into Bear Creek or Sulphur Creek (French 1977:1-2). In the summer of 2008 a wildfire burned approximately 14,500 acres on Walker Ridge, which has reduced the density of the vegetation in the burned areas and increased the amount of grasses present (California Department of Forestry and Fire Protection [CAL FIRE] 2008; Larson 2008a; 2008b).

The western section of the recreation area is wetter, with many streams feeding into long, steep canyons that flow into the Indian Valley Reservoir and Long Valley. Several flat valley floors, such as Wilson Glade and Panther Canyon, contain oak savannas and woodlands (French 1977:1-2). The southern portion of the study area contains gentler rolling hills with shallower canyons draining towards the North Fork of Cache Creek.

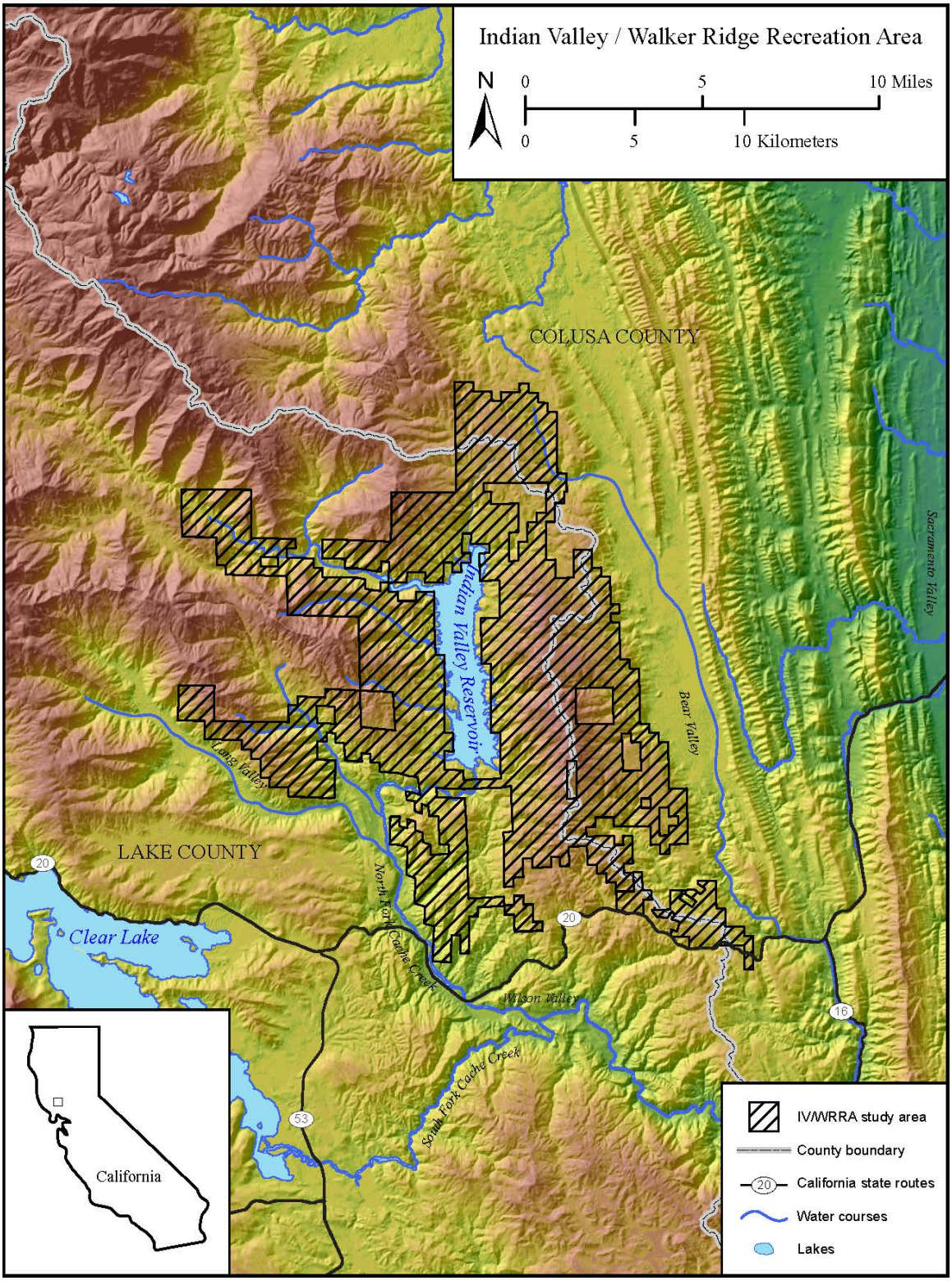

Figure 3. Study area and topography

GEOLOGY

The North Coast Ranges formed when the Pacific tectonic plate subducted beneath the North American plate. This pressure from the west caused the folding and cracking that resulted in their characteristic series of parallel ridges and valleys (Schoenherr 1992:264). Most of the material making up the North Coast Ranges is a set of late Mesozoic (150-65 million year old) deposits known collectively as the Franciscan Formation. This formation is primarily made up of sedimentary rocks formed from volcanic erosion, known as greywacke, that have other sedimentary rocks such as cherts and shales occasionally present. Mixed in with the sedimentary deposits are metamorphic rocks known as serpentinite. When it erodes, serpentinite forms soils that are rich in magnesium and iron, but deficient in calcium, sodium, and potassium, and are usually colonized by unique plant communities such as chaparral (Schoenherr 1992:265). On the eastern side of the North Coast Ranges the Franciscan Formation abuts a belt of sedimentary rocks known as the Great Valley sequence, particularly the Knoxville Formation (Enderlin 2002:1; Schoenherr 1992:265). This is composed of mudstone, which erodes to form silty soils that support oak woodlands and grasslands (University of California Davis 2007)

The IV/WRRA is on the eastern side of the North Coast Ranges where the Franciscan Formation meets the Great Valley Sequence (Schoenherr 1992:265). A variety of geological deposits are present within the study area, but most are part of these two formations. The northwestern and southeastern potions of the study area are part of a

large section of the Franciscan Formation which extends from the northwest. The area surrounding Wilson Glade, extending from Kattenburg Canyon to The North Fork of Cache Creek, is composed of a deposit of Franciscan volcanic and metavolcanic rocks. In the northwest corner of the study area around Indian Ridge is the edge of a large deposit of Pre-Cretaceous metasedimentary rocks (Jennings and Strand 1960).

There are two main deposits of Great Valley Sequence within the study area. The first is a large Mesozoic ultrabasic intrusive rock deposit extending from the northwest, forming the area north of the reservoir, the area around Baldy Mountain, and ending at the southern end of Bear Valley (Jennings and Strand 1960; Orlins 1971a:13-15). The second is an area of Knoxville Formation deposits at the southern end of Walker Ridge, south of Signal Rock and extending down the ridge between Sulphur Spring Canyon and Grizzly Canyon (Jennings and Strand 1960).

There are also areas where there are much younger sediments from the Pliocene and Pleistocene epochs (less than 5 million years old). Sections of the lower hillsides and the valley floor (now beneath the reservoir) are composed of more recent erosional sediments, including Quaternary alluvium and Quaternary nonmarine terrace deposits. In the very southern reaches of the study area, around Benmore Canyon, are Plio-Pliestocene nonmarine sediments (Jennings and Strand 1960).

ENVIRONMENT

Due to its location on the eastern edge of the North Coast Ranges of California, the IV/WRRA is in a Mediterranean climactic zone, represented by hot, dry summers and cool, wet winters. This places it in the Inner North Coast Ranges district of the North Coast Ranges subregion of the Northwestern vegetation region, as defined by Hickman (1993:39). This district is characterized by chaparral and mixed pine/oak woodland, low rainfall (16-30 inches annually), and high concentration of serpentine soils (Hickman 1993:39, map). There are four plant communities well-adapted to conditions that exist within the study area: chaparral, pine/oak woodland, riparian corridors, and oak savannas (French 1977:2; Gankin 1971:106-109; Küchler 1977:19-23). These are not absolute categories, and plant species from one may be represented in another, while some, like western poison oak (*Toxicodendron diversilobum*), are ubiquitous across all four (Hickman 1993:136).

Chaparral is the most common and is present on the hill and canyon sides as well as on ridges and saddles. This plant community is comprised of dense woody shrubs with small, tough leaves designed to conserve water (Küchler 1977:19-20; Munz and Keck 1959:17). While there is a very large variation of plant species within this community, it tends to be dominated by chemise (*Adenostema fasiculatum*), various species of manzanita (*Arctostapholos* spp.), and various species of buckthorn and buckbrush (*Ceanothus* spp.) (Küchler 1977:19-20; Munz and Keck 1959:17). In the IV/WRRA, MacNab cypress (*Cupressus macnabiana*) is also a major component of the

chaparral and is a dominant species in the basins between low hills and on flats, while the previously mentioned species dominate the slopes (French 1977:1-2; Hickman 1993:112). Also present in large numbers are hollyleaf coffeeberry (*Rhamus crocea ilicifolia*), toyon (*Heteromeles arbutifolia*) and California buckeye (*Aesculus californica*), as well as small trees such as scrub oak (*Q. dumosa*) and birch-leaf mountain-mahogany (*Cercocarpus betuloides*) (Gankin 1971:112; Hickman 1993:661, 682, 940-953). Due to the shallow soils and dry conditions, these smaller trees tend to be barely more than shrubs (French 1977: 2; Gankin 1971:105-109; Orlins 1971:16, 21).

On the valley bottoms the main floral community is the oak savanna or grassland. This consists of individual or isolated groves of valley and blue oaks (*Quercus lobata* and *douglasii*) surrounded by California prairie, which includes grasses, herbaceous perennials, and occasional shrubs (Gankin 1971:107-108; Hickman 1993:661-662; Küchler 1977:22-23). Some of the perennials were referred to historically as "Indian potatoes" and include wild onions (*Allium falcifolium* and *amplectans*), brodiaeas (*Brodiaea corona*, *laxa*, *puchella*, and *peduncuaris*), adobe lily (*Fritillaria pluriflora*), and mariposa lilies (*Calocortus luteus*, *pulchellus*, and *tolmiei*) (Gankin 1971:108; Hickman 1993:1194-1196, 1186-1188). Bowltube iris (*Iris macrosiphon*) and soap plants (*Chlorogalum pomeridianum*) were used ethnographically for cordage fibers (Gankin 1971:108; Hickman 1993:1154, 1190). While many of the current grasses are invasive Mediterranean species such as wild oats (*Nassella* spp.) and brome grasses (*Bromus* spp.), there are still remaining native grasses, including California buckwheat (*Eriogonum* spp.), which was used by Native Californians for its seeds (Gankin 1971:109, 112-113; Hickman 1993:872, 1239,

1274; Küchler 1977:23). Several introduced species are a nuisance in the area, including star-thistle, medusa head, and barbed goat grass (Lloyd 2011a:pers. comm). The oak savannas are most common west of Indian Valley, near Wilson Glade and Panther Canyon (French 1977:2).

Two types of wooded areas exist within the IV/WRRA. The less common is a small knobcone pine (*Pinus attenuata*) forest on Cold Spring Mountain (French 1977:2; Hickman 1993:118). More common are the mixed gray pine (*Pinus sabiniana*) and blue oak woodland (or foothill woodland), which form groves within the larger chaparral environment (Hickman 1993:120; Küchler 1977:19; Munz and Keck 1959:17). These are most prevalent on gentle slopes and the margins of the valleys within the study area (Gankin 1971:107, 112; Orlins 1971: 16, 21).

Along the many streams and seasonal watercourses, especially within oak savannas, are riparian corridors. The dominant vegetation of this community is willows (*Salix* spp.) and cottonwoods (*Populus fremontii*) (Gankin 1971:107; Hickman 1993:990; Küchler 1977:20). In more level areas meadows can be present. Many of the same perennials from the oak savannas can be found in the understory here, as well as stream orchids (*Epipactis gigantea*) and California grapes (*Vitis californica*) (Gankin 1971:105-109, 112-113; Hickman 1993:1098, 1214; Orlins 1971: 16, 21).

A considerable number of both terrestrial and aquatic faunal species are present in the IV/WRRA. Terrestrial mammals include black-tailed deer (*Odocoileus columbianus*), black bear (*Ursus americanus*), rabbits (*Sylvilagus* spp.), and hares (*Lepus californicus*), all

species that are actively hunted today and were also hunted during the in the prehistoric and ethnographic periods. Similarly, various bird species continue to be hunted, including mountain quail (*Oreortyx pictus*), California quail (*Callipepla californica*), and dove (*Zenaida macroura*) (US-BLM 2008; French 1977:1-2). Within the streams and adjacent reservoir are found a mix of introduced game fish as well as natives such as kokanee salmon (*Oncorhynchus nerka*) and rainbow trout (*Oncorhynchus mykiss*) (US-BLM 2008; California Department of Fish and Game [DFG] 2010).

II. ETHNOGRAPHIC CONTEXT

INTRODUCTION

The region presently encompassed by the IV/WRRA was occupied at the time of historic contact by people belonging to the Hill Patwin ethnolinguistic group, a subset of the larger Patwin language family and part of the Penutian linguistic stock (Johnson 1978:350-351; Kroeber 1925:354, Plate 34). The region is located on the far western edge of the Hill Patwin ancestral territory, where they are likely to have had considerable contact with other groups. Neighboring groups included the River Patwin to the east, the Northeastern Pomo to the north, the Eastern Pomo to the west, and the Lake Miwok to the south. Several ethnographies deal with the study area, but none are complete due to the scarcity of Hill Patwin consultants. Notably, Stephen Powers wrote about and coined the term "Patwin" in his 1877 *Tribes of California* and S.A. Barrett included them in his *Ethno-Geography of the Pomo and Neighboring Indians*. In the early 1920s, W.C. McKern (1922) developed an ethnography of the Patwin kinship system and their village buildings. The major work on the subject is Alfred Kroeber's 1932 *The Patwin and their Neighbors*, which expanded on Powers and Barrett using Patwin consultants from the Rumsey and Cortina Rancherias. More recently, David Fredrickson worked with *Yawi-sel* Hill Patwin consultant Mabel McKay in the area around Sulphur Creek (Fredrickson et al. 1978).

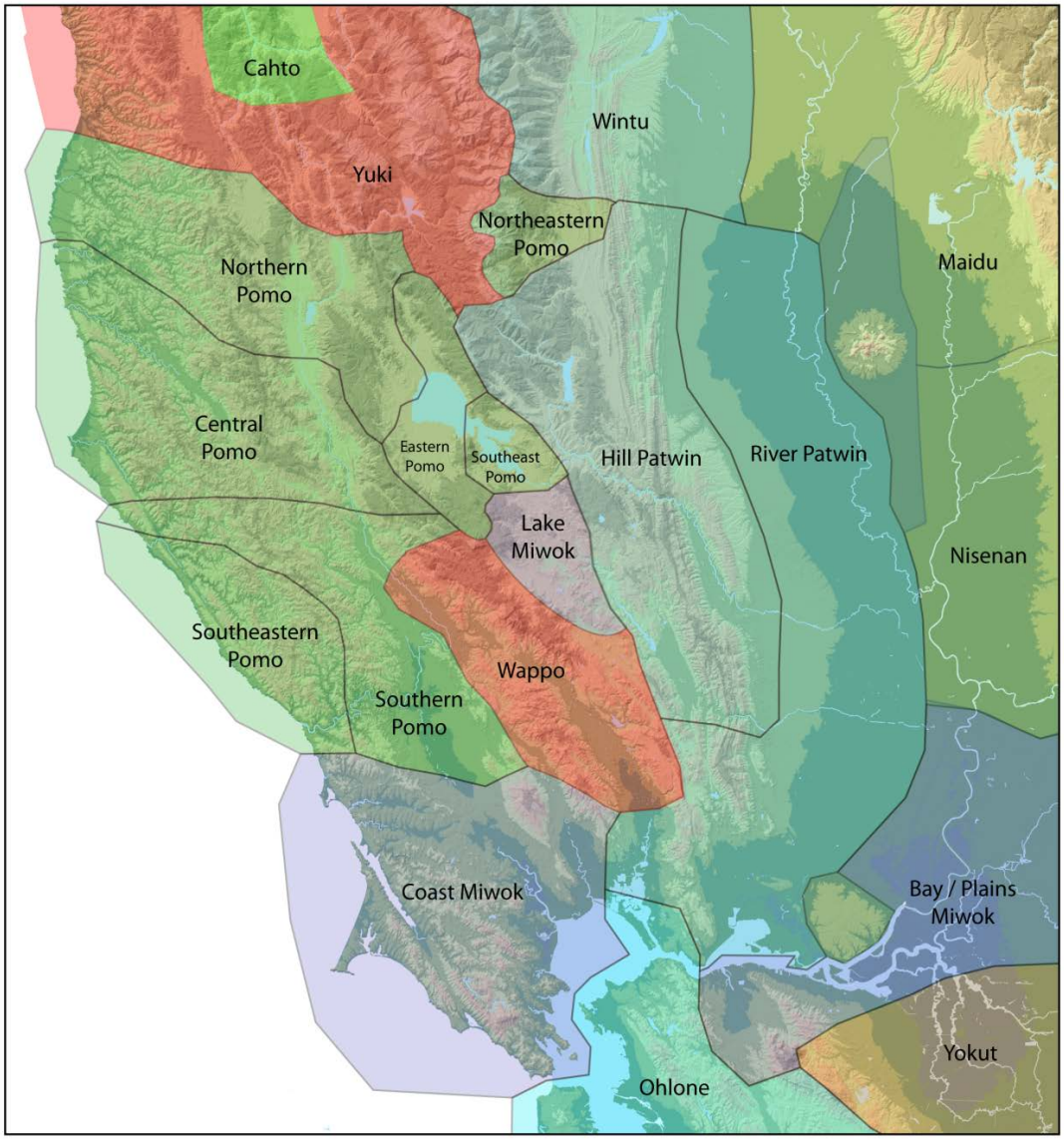

Figure 4. Ethnolinguistic groups, at time of contact (Based on Golla 2011).

SOCIAL ORGANIZATION

Political Structure

The Hill Patwin were organized into small groups commonly referred to as tribelets; these autonomous groups consisted of a main village, several satellite villages, and temporary camps (Kroeber 1932:258). According to Kroeber, the territory held by these tribelets usually corresponded with a particular watershed or drainage area (1932:257). Several tribelets were present in the study area, notably *Lol-sel* and the *Tebti-sel*. The Hill Patwin suffix *-sel* is a group indicator denoting "people of" a particular place. The permanent villages were inhabited during the winter and spring months and were located where streams enter wide valleys, evidenced by the naming of several villages *Tebti*, meaning "confluence"; one such village is adjacent to the study area where Long Valley Creek meets the North Fork of Cache Creek (Kroeber 1932:263). The temporary camps, in contrast, were dispersed throughout the tribelet territory, often at higher elevations, near resources and occupied during the harvest of that particular resource (Kroeber 1925:354). The main village was signified by possessing a dance house, and the head chief resided in this village. Other settlements had chiefs but were subordinate to the central village. The position of chief was hereditary and mainly included distributional and ceremonial duties, including allocation of resources and presiding over dances (Kroeber 1932:259; Johnson 1977:354, 358-359). In the region encompassed by and adjacent to the IV/WRRA there have been confusing and contrary descriptions of the different groups and the territories that they may have occupied. A

more detailed examination of the local tribelets and their territories is presented in Chapter V. At least four tribelets appear to have held territories that overlapped the IV/WRRA: the *Lol-sel*, the *Tebti-sel*, the *Ol'po-sel,* and the *Yawi-sel*. The territory of an additional tribelet, the *Chuhel-mem-sel*, was located to the north of the project area, in the watershed of Stone Creek, and may have included the area now within the northern reaches of the IV/WRRA (Figure 5). There are also inconsistencies over spelling and pronunciation of the villages and tribelet names. I will follow Kroeber's spellings (Kroeber 1932).

The local tribelets had a considerable population prehistorically. Kroeber (1932:257) estimated that 200 to 300 people inhabited each community prehistorically, but by the time Barrett (1908:291, 295-300) visited the area at the beginning of the 20th century, the villages were no longer occupied. The former inhabitants of these villages were living at the Cache Creek, Cache Creek Ridge, and Long Valley rancherias located nearby. When Kroeber visited in the summers of 1923 and 1924, only a few families remained in the area, the rest had moved to the Rumsey and Cortina rancherias (Kroeber 1932:254).

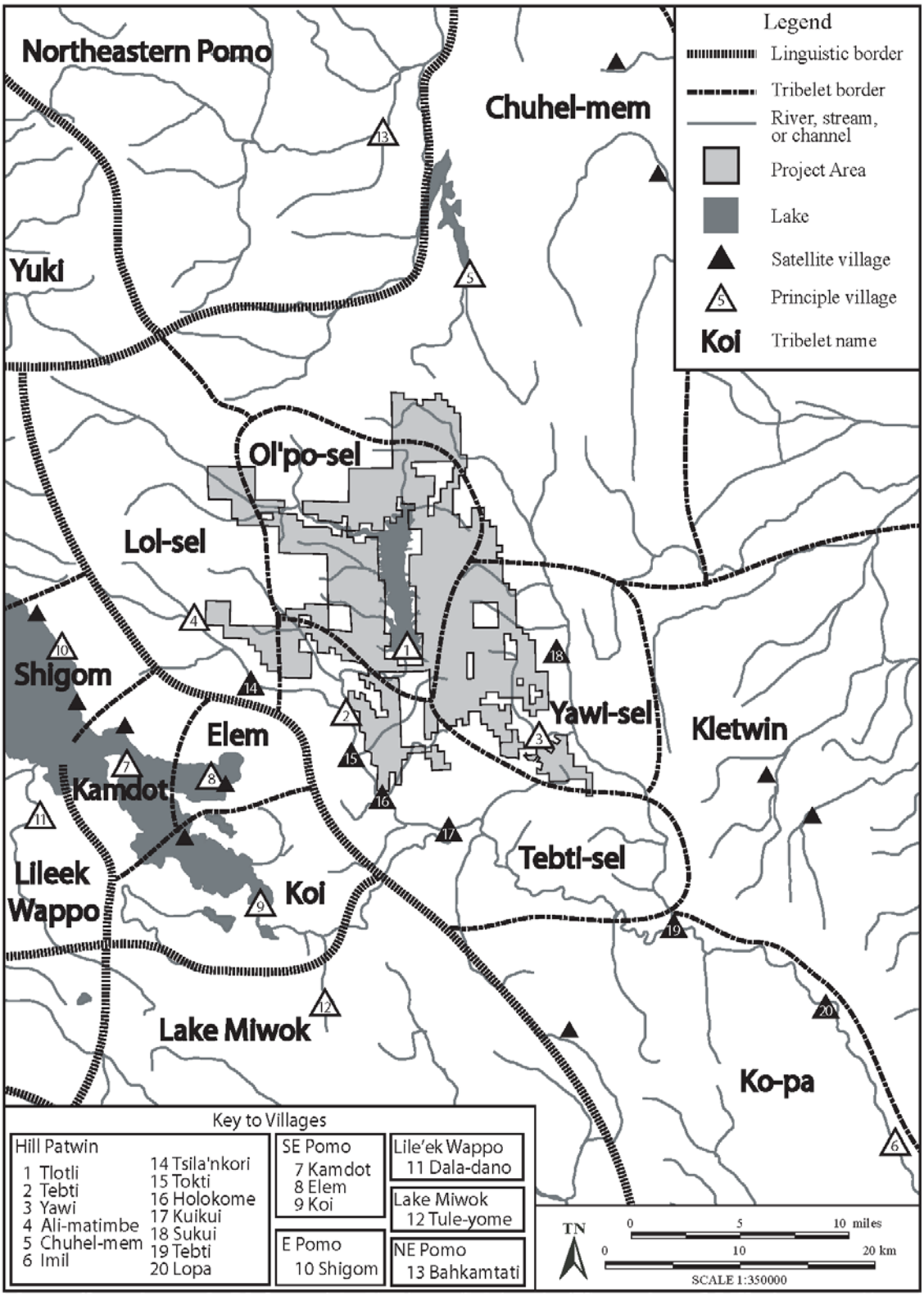

Figure 5. Linguistic, tribelet, and village map. Composite ethnographic map showing linguistic and tribelet boundaries, and village locations. (Adapted from Barrett 1908:334; Fredrickson et al. 1978:Map 2; Kniffen 1939:355; Kroeber 1932:424; Merriam 1903:260)

Family Structure

McKern (1922:238) identified three levels of family for the Hill Patwin, only one of which was recognized emically (within the society), the paternal family (*se´re*). Kinship was determined patrilineally and included all the descendants and relations of the family head through male consanguinity, but not through marriage affinity. Marriage, however, was matrilocal, so until a man could gather enough resources to start his own household, he resided with his wife's father. This brought him into his wife's family social group, which in addition to the paternal family included any affines who had not established their own households. The segment of the family that lived in a single dwelling was the household, and often contained several "nuclear" families (Johnson 1978:254; McKern 1922:238-241).

Certain paternal families possessed a particular "function", a hereditary specialty that could be ceremonial, occupational, official, or spiritual in capacity (McKern 1922:247). The function was considered to be communal property of the family, although not every member necessarily participated in the specialty. Functional families also possessed certain medicines, charms, and rituals that enabled them to be successful in their function. Over twenty named functional families existed, although not every family was represented in every village. Ceremonial families were responsible for specific ceremonies and possessed the medicine preparations and paraphernalia that allowed the ceremony to be performed without harm. Occupational families possessed certain charms and medicines that helped them to be successful in a particular endeavor, such as certain types of fishing, obsidian arrow point production, bird trapping, drum

making, special feather-working, and special basket making. Other families were excluded from these activities with the exception of trapping and fishing. Official families included a member who held a particular ceremonial office that could only be passed to another family member. Such offices included song leaders, *hesi* fire tenders, dance drummers, and *ya´i´tu* spiritual practitioners (McKern 1922:246-251).

Members of spiritual families were eligible for apprenticeship to become spiritual practitioners known as *malie´mta,* and the families possessed the paraphernalia required. These *malie´mta* practiced healing, poisoning, and spiritual intervention. This functional family did not include ceremonial spiritual practitioners, known as *ya´i´tu*, who practiced only within a ceremonial setting and belonged to an official family. Adoption was a common way of bringing new members into a functional family and multiple ceremonial families would adopt talented *ya´i´tu* to help prepare their members for ceremonies (McKern 1922:246-253).

Separate from the functional families, but still important in the social order, were secret societies who participated in Kuksu ceremonies. The Kuksu religious system centered on an ancestral anthropomorphic deity (*kúksu* in the Eastern Pomo language, where the term originated) impersonated during the ceremonial dances, and often included aspects of world renewal and the recreation of sacred events (Bean and Vane 1978:665). These societies were only open to male youths who had been sponsored by older paternal family members (Johnson 1978:353).

LANGUAGE

The Patwin language is in the Wintuan language family, a branch of the Penutian linguistic stock. The major split in this group occurred approximately 1500 B.P. between Northern Wintuan, comprised of the Wintu and Nomlaki languages, and the Southern Wintuan languages, usually referred to as Patwin (Golla 2007:77). The name Patwin is derived from the word used to denote "people", *pat-win* (Kroeber 1925:355). There is debate over whether the differences in Patwin dialects are sufficient to warrant them being called separate languages. Patwin contained at least two major dialect complexes, Hill Patwin and River Patwin, each with several dialects, with a possible third complex, Southern Patwin existing on the north shore of Suisun Bay (Shepherd 2006:xiii). The Lake County or *Tebti* dialect was the one most likely spoken in the region around Walker Ridge (Shepherd 2006:xiii, 3). All of the dialects within the Patwin language were mutually intelligible to each other, but not to the Nomlaki and Wintu speakers to the north (Golla 2007:77-78; Johnson 1978:350-351; Kroeber 1925:354-355; 1932:253). As a language, Patwin must have originated outside of California, probably in Oregon, as the names for local plants and animals were loanwords from Miwok languages (Golla 2007:77-78; Shepherd 2006:1). Similarities in the phonological and grammatical systems of Wintuan and Pomoan language families suggest there has been a long and important relationship between their speakers, evidenced by the presence of certain linguistic traits that are unique in western North America (Golla 2007:77-78).

EXTERNAL RELATIONS

There was considerable contact between the inhabitants of Long and Indian valleys and the peoples near Clear Lake, including two Southeastern Pomo groups, the *Elem* (called *Mol-sel*) and the *Koi* (called *T´ul-sel*), the *Shigom* Eastern Pomo group, and the *Tule´-yomi* Lake Miwok (called *Doko´dihi*) (Kroeber 1932:262, 351). Access between these regions was easier than to the east. The Long Valley people were allowed by the local Pomo to come to Clear Lake to fish and to Borax Lake to obtain obsidian, but needed permission to gather seeds or acorns. The Cache Creek Patwin, presumably the *Tebti-sel*, could gather obsidian but needed permission to fish in Clear Lake. In the same fashion, the Pomo groups needed permission to gather seeds and acorns in Long Valley. These groups intermarried frequently as well. The relations between the *Lol-sel* of Long Valley and the *Shigom* Pomo were particularly close and intermarriage between them were practiced regularly (Johnson 1978:352; Gifford 1923:79).

There was also interaction between the Hill Patwin and the Northeast Pomo to their north, from whom they obtained salt (Davis 1961:35). Trade was common between the Hill Patwin and the River Patwin, and the exchange network that took shell and magnesite beads took between the Clear Lake area and the Sacramento Valley passed through Hill Patwin territory (Davis 1961:35; Kroeber 1932:273-274). There was also frequent feuding between groups, most of which arose from offenses such as poaching or allegations of poisoning. The *Lol-sel* and the *Tebti-sel* had several family vendettas between them (Johnson 1978:352-352; Kroeber 1932:262, 273, 297-298; Powers 1877:221).

The Hill Patwin had relationships with the River Patwin groups living in the Sacramento Valley. The shell used to make beads and pendants, which came from both the Pacific and from Clear Lake, was traded by the Hill Patwin to the River Patwin in exchange for yellowhammer headbands and woodpecker scalp belts that they received from the Maidu in the Sierra Nevada. Tobacco grew wild in the valleys inhabited by the Hill Patwin, particularly in the territory of the *Lol-sel* (tobacco people) in Long Valley, which also made its way to River Patwin tribelets (Kroeber 1932:273-274, 297).

BUILDINGS AND STRUCTURES

The Patwin constructed both permanent and temporary buildings. The permanent buildings were constructed in groups constituting winter villages (*di'hi*) in areas close to water and essential resources. They are partially subterranean earth-covered round buildings. While the River Patwin constructed slightly oblong buildings, those of the Hill Patwin were more circular. These buildings can be divided into four types, the dwelling house, the ceremonial dance house, the sweat house, and the menstrual house (Johnson 1978:357; McKern 1923:160).

All permanent structures, regardless of their function, were constructed in a similar fashion. First a circular pit with vertical sides between 60 cm. (2 ft.) and 120 cm. (4 ft.) tall was excavated. Then a retaining wall about 60 cm. (2 ft.) taller than the pit was constructed out of upright stakes placed every 150 cm. (5 ft.) to 240 cm. (8 ft.) around the perimeter and filled in with "thatch-work" (McKern 1923:160). The excavated soil was

mounded around the edge. Forked house posts of thick oak were set in post holes evenly spaced throughout the building. These were connected by horizontal oak stringers that supported the thinner cottonwood or willow rafters. Thatched brush was laid over the rafters and covered with a 30 cm. (1 ft.) thick layer of packed earth. In the mountains roofs may have sometimes been covered with wood instead of earth. A square hole was left open at the top for smoke to escape and light to enter, and could be covered with a tule mat. A sloped passage connected the exterior ground level with the floor of the building, reinforced by a continuation of the retaining wall and covered with a similar superstructure as the rest of the building (McKern 1923:160-163; Powers 1877:221).

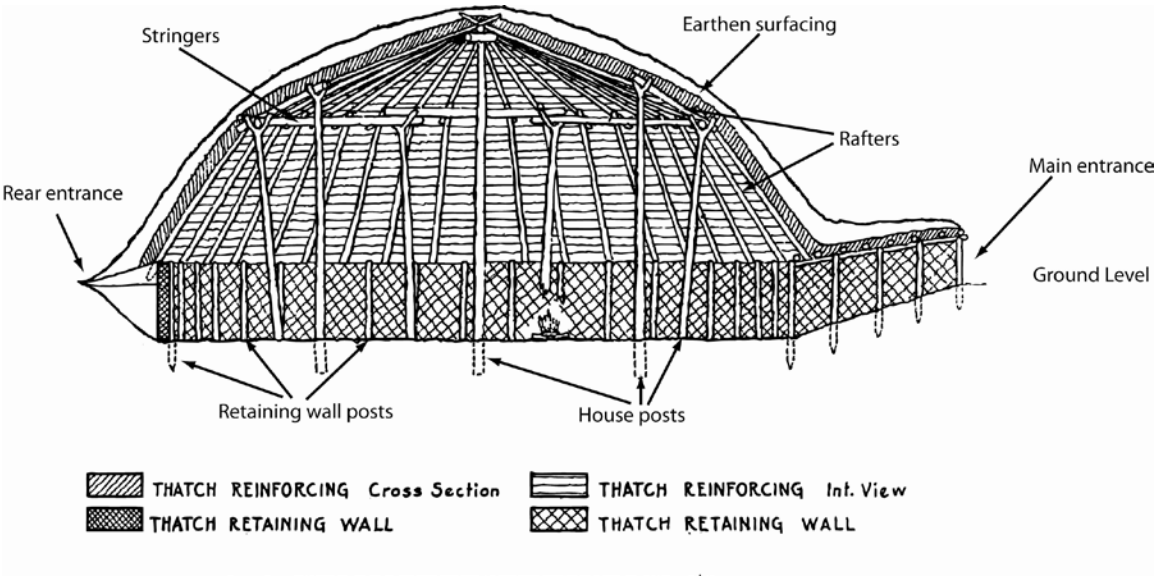

Figure 6.Patwin dance house cross section (adapted from McKern 1923:163.)

The menstrual house was the smallest of the permanent buildings, with a diameter of no more than 6 m. (20 ft.). Two posts supported the superstructure, placed along an east-west axis with the entry passage at the eastern end. The hearth was located between the house posts with the smoke hole to the south of the central roof peak (McKern 1923:167).

Dwelling houses were usually between 6 and 9 m. (20 and 30 ft.) in diameter and had six equidistant posts placed in a circle halfway between a central hearth and the walls. The entryway was either on the east or west side, with one post placed directly in front of it and another directly opposite. A large log fashioned into a milling surface containing a mortar was located behind the post opposite the entry (McKern 1923:165-166).

Sweat houses were built on the same plan as the dwelling houses, only larger in order to accommodate more people at one time. The diameter of a sweat house was usually between 12 and 15 m. (40 and 50 ft.) and had a higher superstructure, while the depth of the pit and the size of the entrance remained the same. Sweat houses were built either to the east or the west near the ceremonial house, with the entryway facing towards it (McKern 1923:167). Kroeber (1932:293) reports that there were no dedicated sweat houses among the Hill Patwin and that the dwellings were used for this purpose. This might not be an accurate description as both the spiritual and practical aspects of sweating may have been difficult to perform in the dwelling to size and occupation constraints.

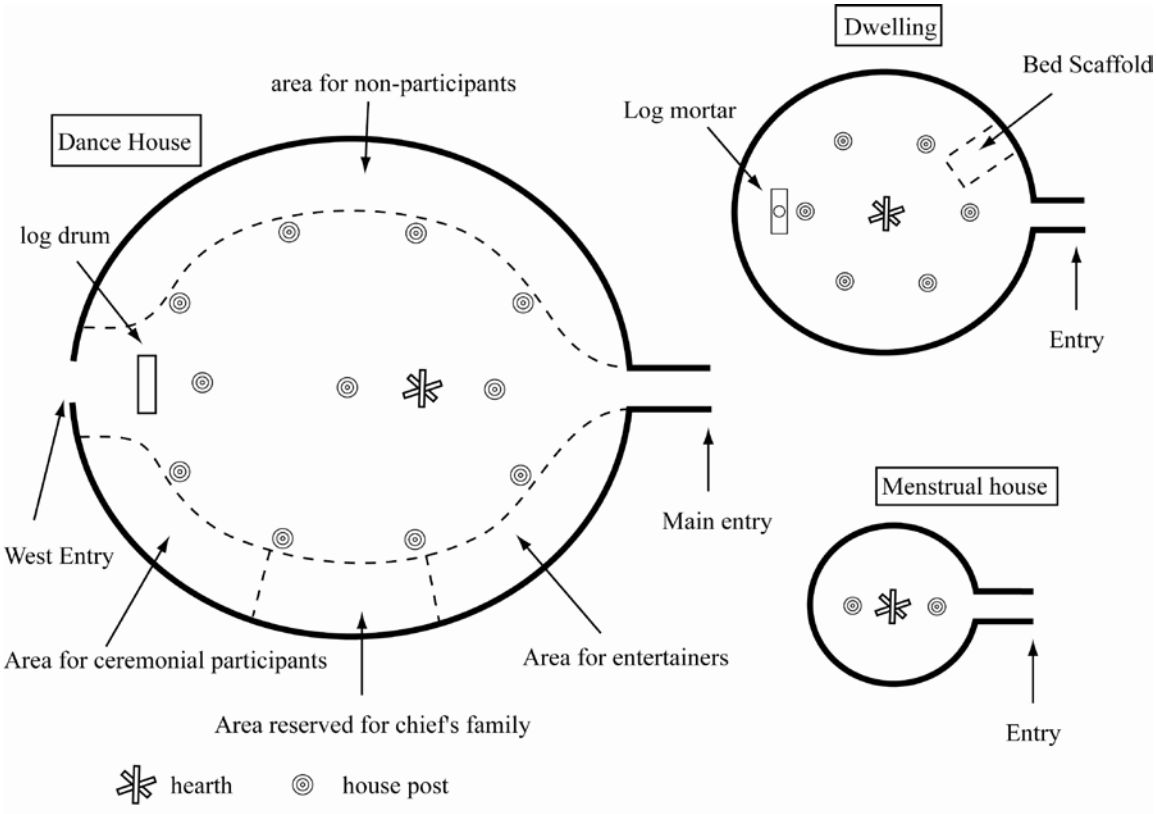

Figure 7 Ground plans of Hill Patwin buildings (adapted from McKern 1923:170)

The largest buildings that the Patwin constructed were the ceremonial dance houses. These were between 12 and 23 m. (40 to 75 ft.) in diameter and were supported by 11 house posts. The dance house was the only building to have two entrances, with the standard passage on the east side and a secondary entrance, for the dancers' use only, constructed without a passage into the west side. A singular large post referred to as the "chief" (*se'ktu*) stood at the center of the building and was as tall as half the diameter of the dance house. On either side of the central post between it and the entrances were the front and rear posts, which were taller and further away from the walls than the side posts. There were four posts on both the north and south sides of the dance house that inclined slightly outwards toward the walls. A large sycamore log drum was placed between the rear post and the rear entrance. The hearth was located

between the central post and the front post. The performance area was located inside the side posts, the area between the posts and the walls on the south side was reserved for the ceremony participants, and the north side was for non-participants (McKern 1923:167-171).

Kroeber (1932:283) mentions that each village also contained a well, made of a large open hole dug into the ground at a low point. There was no need to dig very deep due to the villages' proximity to streams. It is unclear, however, if this refers to the River Patwin exclusively or included the Hill Patwin as well. Granaries were built to store harvests, mainly of acorns but also pine nuts and grass seeds. These could be of two different forms. Often they were structures that stood 2.5 to 3 m. (8 to 10 ft.) high constructed out of sticks and bark and covered in a thatch of grass and bark. The second type was subterranean consisting of a pit lined with grass and pine bark or deer hides and surrounded by a small drainage trench (Kroeber 1932:296; Merriam 1903:274).

Temporary buildings were constructed when people were living away from their village, usually between midsummer and late fall during various harvests such as berries, acorns, and fish. The basic unit of these buildings is a ramada with four corner posts and a rear sloping thatched roof, usually without walls. As families gathered, they constructed adjoining ramadas, forming small complexes (McKern 1923:171).

It is difficult to say with certainty how the structures of the Hill Patwin differed from those of the River Patwin. Much of the information gathered by early ethnographers took place in rancherias such as Cortina, which were inhabited by

descendants of both River and Hill groups. McKern (1923:159) writes that he did not know if his information was accurate into the hills, although an early description of a dwelling being built in Long Valley by *Lol-sel* people matches his report (Palmer 1881:25). Thus there may be differences that were not recorded and the differences that were mentioned may be inaccurate or particular to a certain area of Hill Patwin territory. Merriam (1903:273) reported that the *Chuhel-mem-sel* had constructed at least some of their houses from gray pine planks in "early times" but makes no mention of whether this was the case for other Hill Patwin groups. He also states that in the temporary camps that were inhabited for longer periods the *Chuhel-mem-sel* constructed conical bark dwellings rather than thatched ramadas. According to Kroeber (1932:293-294), the Hill Patwin did not build separate sweat houses and often constructed the menstrual house in the same fashion as the temporary camp dwellings of thatch or gray pine bark.

SUBSISTENCE

The Hill Patwin used a wide variety of plant and animal food. Of special importance were elk, deer, acorns, and salmon. Valley oaks and blue oaks were the preferred trees for acorns, but live oak acorns were also used. Oak groves were shared communally, while seed fields were held by families. Acorns were processed by leaching in a sand basin covered by a woven tule mat to blunt the impact of the water. The acorn flour was made into large loaves of bread, which could be 60 cm. (2 ft.) long and could feed a family for several days. Manzanita berries were harvested to make a

cider as well as to dry and grind into a flour to make bread. A variety of grass and plant seeds were ground and either eaten dry or as pinole. Other plant foods were used, such as clovers, greens, bulbs, berries and nuts (Kroeber 1932:294-296).

Every season the village chief would assign each family its own forage area in addition to the ones held hereditarily (McKern 1922:244). The Hill Patwin used both local and non-local species of fish. Perch, suckers, rainbow trout, hardheads, and pike were all available locally. Salmon had to be acquired from the Northeastern Pomo along Stony Creek or the River Patwin, while hitch, splittail, blackfish and others could be caught in Clear Lake, usually with permission from the *Elem* Pomo (Kroeber 1932:294; White, Wohlgemuth, et al. 2002:507-510). The food taboos of the Hill Patwin were not as extensive as those of the River Patwin and many other native groups. In general, reptiles and amphibians such as frogs, snakes, and lizards were avoided as were carrion-eaters like condors and buzzards. Other taboo foods included dogs, coyotes, and caterpillars. The primary method of hunting deer was a group practice and involved driving the animals either into a corral where they were shot with arrows or into nets and snares (Kroeber 1932:294-296).

There is little direct information on the seasonal residence systems of the Hill Patwin. For the River Patwin, McKern (1923:171) described a pattern wherein the majority of the inhabitants of the permanent villages vacated them during the harvesting season from midsummer into the autumn. Each family would move to the food areas and set up a temporary camp, bringing the essential equipment with them. They varied

where they collected the greatest food quantities from year to year to prevent overexploitation. During the winter and spring the families would return to reside in the permanent villages with their harvests. However, not all residents would remain in the winter villages, as some would travel into the Sacramento Valley and hunt the large numbers of geese, ducks, swans and other migratory birds that arrived during this season to the wetlands (Barrett 1908:288). Gifford (1923:78-82) states that the *Lol-sel*, and to a lesser extent the other tribelets of the Cache Creek area, had the right to fish in Clear Lake, with or without permission depending on the groups involved. Clear Lake has productive fisheries that occur in late winter and early spring, such as the hitch and splittail run between February and April and the blackfish run between April and July (White, Wohlgemuth, et al. 2002:507-510; White and Meyer 2002:526). This suggests that at least some of the Hill Patwin from Long Valley and Cache Creek would have been away from their permanent villages harvesting fish in the winter and spring.

MATERIAL CULTURE

The Hill Patwin relied heavily on basketry and wooden items and did not produce many groundstone artifacts. Their baskets could be either twined or coiled. Production of these baskets included a wide variety of techniques, some of which are unique to the Patwin, while others are similar to techniques used by the Pomo, Wappo, Valley Maidu, and Sierra Miwok (Johnson 1978:356-357). Cooking baskets and parching trays were coiled, while the hoppers for mortars, sifters, seedbeaters and carrying baskets were

twined (Kroeber 1932:362). Bone was used for basketry awls, as well as to make harpoons and hooks for fishing. Hooks were about an inch long and sharp on both ends (Kroeber 1932:278). Wooden mortars were used to process acorns and other seeds among the River Patwin, while the Hill Patwin usually used flat stone slab-and-basket hopper mortars like those of the Southeastern Pomo. Pestles consisted of unmodified elongated stream cobbles. Groundstone item such as bowl mortars, net weights, and charmstones were used as objects of power that were seen as originally belonging to spirits. Oblong polished stones with a piercing at the top were considered to be thunderbolts and were important charms (Kroeber 1932:287).

Obsidian and occasionally chert was used to make flaked tools. The people in the region surrounding the IV/WRRA obtained most of their obsidian by traveling to Borax Lake (Figure 8). Clay was used to make spherical weights for fishing nets. Chisels for woodworking were made from elk antler. Knives for processing fish and other meat into strips were made from the shells of freshwater mussels (Johnson 1978:357; Kroeber 1932:278, 283). As mediums of exchange, shell beads were obtained by the Hill Patwin from the Pomo and burnt magnesite cylindrical beads were either produced locally by the people of Cache Creek or obtained from the Pomo and traded with the River Patwin in exchange for cordage which was turned into netting (Johnson 1978:352, 356-357; Kroeber 1932:273).

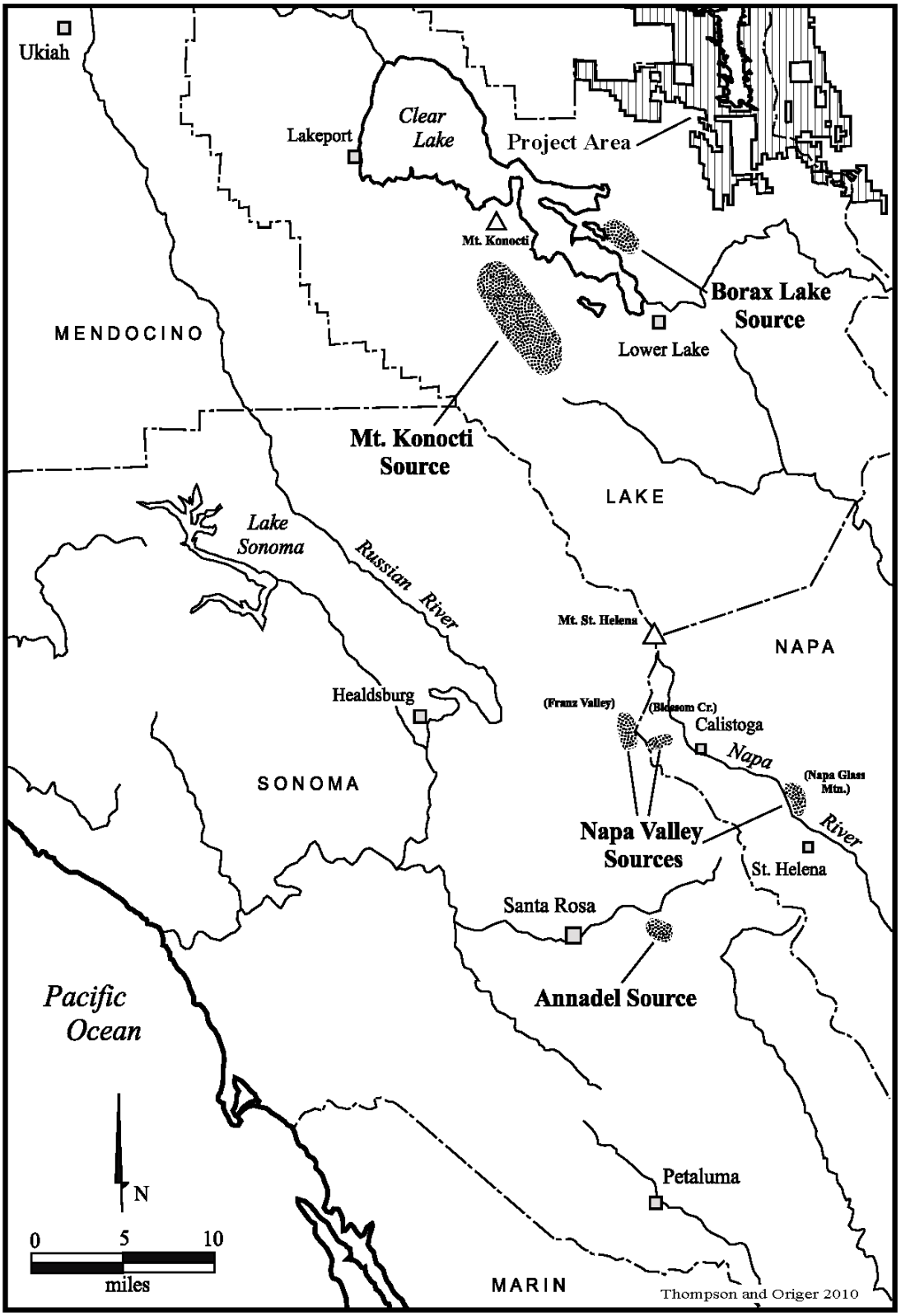

Figure 8: Obsidian Sources in the southern North Coast Ranges (Adapted from map by Thompson and Origer 2010)

BURIAL

The Patwin usually buried their dead in shallow shafts with a niche undercutting the bank on the south side. Certain items of individual property, such as clothing and personal tools, were burned and then added to the burial. This pattern was not followed by the Hill Patwin inhabitants of Long Valley and The North Fork of Cache Creek (*Lol-sel*, *Tebti-sel*, and *Ol'po-sel*), who practiced cremation in the style of the Southeastern Pomo (Kroeber 1932:290-291). It is not clear how much of the mortuary traditions of the Pomo these groups shared; they may have also ritually killed artifacts as part of the burial process. Merriam (1903:275) extended this practice to the *Chuhel-mem* to the north and wrote that it was not simply the personal effects of the deceased that were burned, but items selected to benefit the deceased as well. These were both functional and valuable items, including food, baskets, clothes, beads, feather belts, and other articles, and were brought for the purpose of being cremated along with the deceased. Judging from how the practice of cremation was the usual mortuary method in these two major areas of Hill Patwin occupation, it may be that all the northwestern Hill Patwin groups cremated their dead. Presumably the *Yawi-sel* of Sulphur Creek and Bear Valley followed this tradition like the surrounding groups, but this is unclear. Cemeteries were usually located at the edge of a community, no more than 100 ft. away to prevent grave robbery (Kroeber 1932:290).

III. PREHISTORIC CONTEXT

INTRODUCTION

The IV/WRRA is located at the intersection of two distinct cultural and environmental regions: the North Coast Ranges region to the west and the Central Valley region to the east. Two major archaeological overviews of each of these areas have been produced. The first, Michael Moratto's *California Archaeology* (1984), contains his assessment of the Central Valley archaeological work and cultural sequence and David Fredrickson's similar assessment of the North Coast Ranges. The second, *California Prehistory* (2007) edited by Terry Jones and Katherine Klar, expands on the work from the Moratto volume and includes an assessment by Jeffrey Rosenthal, Greg White, and Mark Sutton for the Central Valley and William Hildebrandt's similar assessment for the North Coast Ranges. Neither the North Coast overviews nor the Central Valley ones deal explicitly with the Indian Valley region or the Hill Patwin, as the Hill Patwin cultural history seems divided between mountain residence at the time of contact and valley origins extending back deeper into prehistory.

Significant information can be gleaned when studies of both regions are consulted together. Rosenthal, White, and Sutton (2007) build on Moratto's previous work in their synthesis of the current research in the Central Valley, composed of the San Joaquin Valley, the Delta, and the Sacramento Valley. Together these form one of the world's largest intermontane basins, bordered by the Coastal Ranges on the west, the Sierra Nevada on the east, the Tehachepis on the south, and the Siskiyou Mountains on the

north (Rosenthal, White, and Sutton 2007:147). Hildebrandt (2007:83) updated Fredrickson's overview of the North Coastal region, defined as the area north of Bodega Bay to the Oregon border and from the Pacific coast to the eastern slope of the Coast Ranges. Specifically, the study area lies between the Sacramento Valley subregion of the Central Valley and the Russian River/Clear Lake subregion of the North Coast Ranges (Fredrickson 1984:475-476; Moratto 1984: 13-14, 168).

CULTURAL CHRONOLOGIES

History of California Archaeological Taxonomies

The first major taxonomic framework for California prehistory was proposed by R. K. Beardsley in the 1954. Expanding on previous work by Lillard, Heizer, and Fenenga (1939) he created what was later called the Central California Taxonomic System (CCTS), which demonstrated geographic and temporal relationships between culture sequences from different environmental areas. Built on models used in other areas of North America, the CCTS was comprised of a set of four nested units. The most basic is the "component" that represents the archaeological record of a single temporally- and geographically-bounded human occupation. Series of related components make up "facies" that then make up "provinces." Provinces are geographically and temporally distinct from each other and have a characteristic complex of cultural traits. Provinces are grouped by culture content and placed in a particular "Horizon" – Early, Middle, or Late (Beardsley 1954:6-7; Hughes 1994:1-3). A flaw in this framework is that it tends to

conflate the separate issues of time, space, and culture, and allow for a single "culture" to occupy a given place at a given time (Hughes 1994:1-3)

Responding to the growing widespread dissatisfaction with Beardsley's taxonomic system, James Bennyhoff and Fredrickson began a series of collaborations that attempted to revise and replace it with a more efficient, cohesive, and understandable taxonomic system that took into account the separate dimensions of space, time, and culture (Hughes 1994:1, 3). Many of these were presentations at meetings and lectures to students or unpublished essays that were not published until 1994 when Richard Hughes (1994:4-5) assembled them into an edited volume. In one of these unpublished – but later cited – essays written in 1969, Bennyhoff and Fredrickson (1994) proposed a new model for the prehistoric taxonomy of California. The categories used in this model included "pattern", "aspect", and "phase." A "pattern" is a unit or adaptation shared by a number of different cultures within a geographic region that exists over an appreciable period of time. It is characterized by the use of similar technologies, economies, and burial practices (Bennyhoff and Fredrickson 1994:20). A single pattern is not uniform throughout its geographic extent; instead local areas will have particular variations and expressions depending on environmental resources, regional specializations, and influences of neighboring patterns. These regional expressions are referred to in this model as "aspects." Aspects can be defined as geographical subdivisions of "patterns" and are represented by stylistically distinctive artifact assemblages. The smallest cultural unit is the phase, which is the chronological subunit of an aspect. A series of phases forms an aspect. A phase has sufficiently characteristic traits to distinguish it from other

phases in the aspect and represents a chronologically limited interval of time (Bennyhoff and Fredrickson 1994:20-21; Society for California Archaeology [SCA] Glossary 2010).

A separate but complementary system was proposed by Fredrickson (1974) several years later. This system was more temporally rooted than the "pattern" system and sought, following Meighan (1959), to integrate California's prehistoric chronology with that of the rest of the United States. In this model, the "Horizons" proposed by Beardsley were reworked into "periods", which Fredrickson labeled Paleo-Indian, Archaic – further divided into Lower, Middle, and Upper Archaic – and Emergent Periods. The Paleo-Indian and Archaic Periods were already in use in other areas of North America and Fredrickson proposed Emergent as the California nonagricultural equivalent to the Formative Period used elsewhere (Fredrickson 1974:42-49).

The final system that is used in California is not primarily archaeological in nature. The epochs of the Pleistocene and Holocene are geological time spans and mainly relate to the end of the last ice age. The Pleistocene is the early portion of the current Quaternary period and encompasses the last ice age. The Holocene is the current epoch and represents the portion of the Quaternary following the end of the Pleistocene glaciation and is often divided into early, middle, and late periods. This system is mainly used by paleobotanists and archaeologists working with the sites of the earliest inhabitants of California (SCA 2010; West et al. 2007).

The use of these taxonomic systems in California is quite varied. While most archaeologists have accepted the systems put forward by Fredrickson and Bennyhoff,

others continue to use the older Horizon sequence. In this study, Fredrickson's sequence of chronological periods will be used to provide a comparative framework between the two regions, while the pattern system will be used to examine cultural trends, practices, and adaptations.

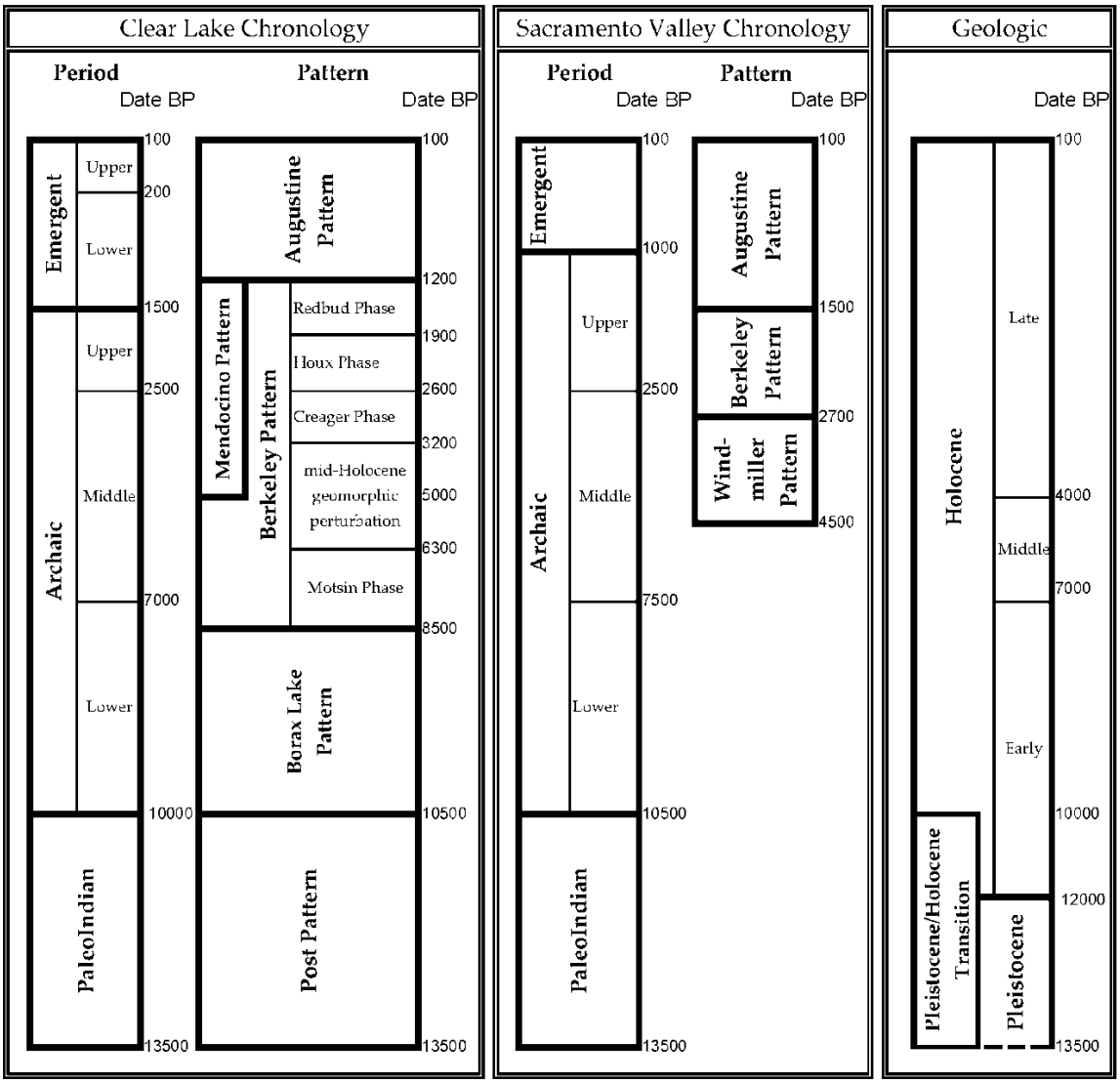

Figure 9. Cultural and Geological Chronologies. Clear Lake basin (Fredrickson 1984; Hildebrandt 2007; White, Fredrickson, and Rosenthal 2002; White, Fredrickson, et al. 2002), Central Valley (Moratto 1984; Rosenthal, White, and Sutton 2007), and geologic divisions (SCA 2010; West et al. 2007; West 2002).

Regional Chronologies

The North Coast Ranges and Central Valley regions have different environments, cultural traditions, and ethnolinguistic histories but there are similarities in the cultural chronologies and patterns that are represented. These chronologies and their regional expressions are described below.

Paleoindian Period (13500 to 10500 years B.P.)

Geologists have delineated the shift between the late Pleistocene and early Holocene as occurring around 12000 years B.P. During this transition, the climate becomes progressively warmer and wetter, and most of California's megafauna, including mammoths, bison, horses, and ground sloths, become extinct. The Paleoindian Period occurs relatively soon after the subsidence of the glacial areas from the high elevation portions of northern California; while the role of humans in the extinction of the megafauna is still hotly debated, it is clear that the Paleoindian period occurred during a time of great climatic and environmental changes (Erlandson et al. 2007:60; Jones and Klar 2007:307; West et al. 2007:15-23).

Archaeological evidence for the Paleoindian period is scarce and usually only dated by the presence of diagnostic artifacts such as fluted Clovis projectile points and flaked crescents. These are found near to the coast but are most common in the interior portions of the state with the greatest concentration in the southern Sierra Nevada and the northern Mojave Desert (Erlandson 2007:56; Rondeau, Cassidy, and Jones 2007:63-64,

68). In California it is rare for these diagnostic artifacts to be found in relation to faunal remains that could assist with dating (Rondeau, Cassidy, and Jones 2007:68). In the North Coast Region this period is represented in the material record by the Post Pattern, most often characterized by fluted projectile points and flaked stone crescents associated with the Clovis tradition (Hildebrandt 2007:86-87). Cassidy (Rondeau, Cassidy, and Jones 2007:69-70) has argued that in California an entire tradition of lithic tools dating to this period has been overlooked, a tradition related to the Paleoarctic Tradition of western Alaska. This is a maritime oriented toolset, consisting of a microblade and woodworking complex that contains all the technological elements necessary to construct and maintain watercraft.

Sites that date to the earliest portion of this period and contain radiocarbon-dated materials are located primarily near to the coast (Erlandson et al. 2007:56; Rondeau, Cassidy, and Jones 2007:63). While isolated finds believed to date to the early extent of this period have been located on the northwest coast of California, none have been dated with much confidence. The sites that have been reliably dated are found along the southern coast. The earliest of these sites are Arlington Springs (CA-SRI-173) on Santa Rosa Island, with human skeletal material radiocarbon dated conservatively to between 13200 and 12000 years B.P., Daisy Cave on San Miguel Island (CA-SMI-261), with multiple occupations dating between 12000 and 6000 years B.P, and Diablo Canyon (CA-SLO-2) where human bone was dated to between 11200 and 10300 years B.P. At least five additional sites that may date back to 11000 years B.P. are also located in the Channel Islands and along the southern coast. By the end of this period there are a

considerable number of well dated sites, including Duncans Landing (CA-SON-348/H) in the North Coast Ranges region (Erlandson et al. 2007:56-59). The presence of coastal and island sites and the earliest fishhooks in the Americas at Daisy Cave demonstrate the seafaring abilities of people during this period. This and the early coastal dates imply that Paleoindian people could have reached California independent of the ice-free corridor between the Laurentide and Cordilleran ice sheets (Erlandson et al. 2007:54-57, 62).

There are fewer interior sites with reliable dates in this period. Two dramatic exceptions are CA-INY-5825, dating to between 12300 and 10300 years B.P., and the Tule Lake rockshelter, (CA-SIS-218), which contained a hearth dated to around 13500 years B.P. and possibly as early as 15000 years B.P. A few others date to 11000 years B.P., but most date to 10000 years B.P. or later (Erlandson et al. 2007:56, 59). This and the absence of good dates for any of the California fluted points means that it is conceivable that the Clovis Tradition originated along the Pacific Coast and spread eastward, but it is more likely that fluted points represent later Paleoindian groups spreading west from the North American interior (Erlandson et al. 2007:56; Rondeau, Cassidy, and Jones 2007:66, 68).

North Coast Ranges region during the Paleoindian Period

Prior to the Paleoindian period, the dominant vegetation, which included sagebrush, pine, spruce and cedar, was characteristic of the cooler, drier conditions that existed. The wetter conditions that prevailed after the glacial subsidence produced a

change around Clear Lake from the conifer forests of the Late Pleistocene to the oak woodlands and chaparral of the Early Holocene (West et al. 2007:22-23).

In the North Coast Ranges region, well defined Paleoindian Post Pattern assemblages are rare. The most well-known is the Borax Lake site (CA-LAK-36), which has been dated with obsidian hydration to the Pleistocene/Holocene transition. There are other sites of similar antiquity such as CA-LAK-510 and CA-LAK-1581 that were also dated through obsidian hydration, because they lack an early component with features or artifacts that could be radiocarbon dated. Since Post Pattern materials have not been recovered from well stratified deposits with other materials present, very little is known about the lifeways of the people of the period (Hildebrandt 2007:86-87).

Central Valley/Sacramento Valley region during the Paleoindian Period

Very little is known about the Pleistocene or early Holocene environment of the Sacramento Valley, due to a short pollen record that has not been well studied. Other evidence such as geomorphic soil studies, vertebrate fossils, and archaeology suggests a mosaic of riparian forests and grasslands in higher elevations and seasonal wetlands in lower ones (West et al. 2007:23-24).

Erosion and deposition events during the Holocene may have covered or destroyed the earlier landscapes of the Central Valley, and with them, the archaeological deposits. As a result, Paleoindian sites are almost completely absent from the Central Valley. In the Sacramento Valley only a single possible fluted point has been recovered, from the Thomas Creek area. The evidence for early inhabitation in the San Joaquin Valley comes

mainly from three sites that contained early concave base points. One of these, Tracy Lake, is located at the north end of the San Joaquin Valley and may give insights into the contemporary Sacramento Valley (Rosenthal, White, and Sutton 2007:150-151).

Linguistic Prehistory during the Paleoindian Period

Multiple linguistic groups may have been present in California in the Paleoindian period; all but the Hokan and Yukian have disappeared. The Hokan group is the oldest such group in western North America, excepting the Yukian group, and the initial inhabitants of most of California may have spoken "Pre-Hokan", the ancestral language to the group (Moratto 1984:543-544). At the time of European contact the speakers of Hokan were divided into five isolated languages and two language subfamilies, Pomo and Yuman, containing seven and five languages respectively in California (Golla 2007:78; Kroeber 1924:226, 709). The time depth required to produce this level of diversity is large, and Golla argues that it is roughly the same as that of the Afro-Asiatic relationship in Africa and the Middle East, or at least 8,000 years. Pre-Hokan speakers may have entered California from the east bringing with them the Western Fluted Point Tradition, which developed into its regional expression, the Post Pattern (Moratto 1984:543-545).

In contrast, the presence of speakers of early Yukian languages may reflect an early migration into, and settlement of, northern coastal California prior to the Hokan during the Pleistocene/Holocene transition as early as 11500 years B.P. (Golla 2007:81). Moratto (1984:544) suggests that the spread of Pre-Yukian groups in the North Coast Ranges

corresponds to the spread of the Borax Lake Pattern in the late Paleoindian and early Lower Archaic periods around 10000 years B.P.

Lower Archaic (10500 to 7000 years B.P.)

The record from pollen and other vegetative indicators points towards a drier climate than that of today. A decline in redwoods and cedars and the increase of oaks and chaparral implies more dramatic seasons including warm, dry summers. Wetlands also appear to have dried up and areas of pine parklands developed in the highland areas. The presence of oaks continued to expand, both in terms of overall range and resident elevations (West et al. 2007:20-22).

North Coast Ranges region during the Lower Archaic

The drier and warmer climate in the Lower Archaic period led to an increase in plant communities that favored these conditions, such as pine in the higher elevations and oaks and chaparral in the lower areas. Pollen cores from Clear Lake sediments indicate that the lake was surrounded by oaks and chaparral species (West et al. 2007:20-23). Most of the shift between pine forests and oak woodlands in the Clear Lake Basin occurred between 10000 and 9000 years B.P. and chemise chaparral moved into the hillslopes where mixed conifer forests had previously existed (West 2002:108, 111). The accelerated growth rate shown in fish remains from Clear Lake sediment cores imply warmer waters during the beginning of this period, but the restricted growth rates after

8000 years B.P. suggest cooler waters, perhaps due to more severe winters and milder summers (White 2002a:27).

The Lower Archaic is well represented archaeologically in the North Coast Ranges region. The early material culture tradition, the Borax Lake Pattern, seems to have arisen first in the southern part of the region in the area around Clear Lake, including the Santa Rosa Plain, before spreading into the northwestern areas of the Coastal Ranges (Hildebrandt 2007:87-89). The Borax Lake Pattern takes its name from the type site near Borax Lake (CA-LAK-36) and is recognized in its southern expression as the Bald Mountain Aspect, dating as early as 10500 years B.P. (White 2002b:545-549). While well represented in this area, so far all of the Bald Mountain sites have only yielded flaked stone, with characteristic forms being wide-stemmed points with square bases (some of which have fluting), ovoid flake tools, and large, thin bladelet flakes. Obsidian hydration of Bald Mountain flakes has provided dates between 10500 to 8500 years B.P., showing that the aspect both begins and ends earlier than neighboring ones such as Buck Rock to the northwest (Hildebrandt 2007:87-89; White 2002b:545-549).

The only case of milling equipment found in association with a Bald Mountain Borax Lake Pattern point has been widely debated as to its cultural affiliation. A large assemblage of handstones, millingslabs, core tools, and a few bifaces and points (one wide-stemmed) found south of Clear Lake in Coyote Valley (CA-LAK-1582) has been interpreted either as a periodically reused early Borax Lake Pattern site or as the northernmost example of a Millingstone Horizon site (Hildebrandt 2007:90). Rosenthal,

Meyer, and White (1995; Hildebrandt 2007:90) argue for the first case, where they say that the site consists of a primary Borax Lake Pattern occupation that was reused for processing gray pine nuts by a later population. Fitzgerald and Jones (1999:84-88), following True, Baumhoff, and Hellen (1979:27-30), dispute this and arguing that the site is a single component representing a cultural group that was separate from either the Borax Lake or the following Berkeley Pattern. Combining this with evidence from sites along the course of Putah Creek beneath present day Lake Berryessa gathered by True, Baumhoff, and Hellen, they interpret the assemblage as a northern Californian expression of the Millingstone Horizon tradition as recognized in Southern California (Hildebrandt 2007:90).

Around 8500 years B.P., a shift occurred in the Clear Lake area as the early Berkeley Pattern appears. This provides the earliest evidence of stable, long-term settlements in contrast with the mobile Borax Lake Pattern that continued in the surrounding areas (Hildebrandt 2007:90). The local manifestation of the Borax Lake Pattern is referred to as the Mostin Phase, after the type site, CA-LAK-380/1, located near the southwestern shore of Clear Lake. This phase represents a transition between the Borax Lake and Berkeley Patterns. Radiocarbon dates establish the relevant deposits at Mostin as firmly between 8500 and 6300 years B.P. (White 2002b:549). This site provides some of the earliest evidence for acorn use in California in the form of pestles and acorn macrofossils. The Mostin Phase is characterized by contracting-stemmed and square-stemmed points, formalized burial patterns with an extended burial posture, and the use of pestle milling equipment (Hildebrandt 2007:90). While the only sites

representing this phase are located in the Clear Lake basin, Mostin Phase assemblages may also occur in other central and southern North Coast Ranges alluvial bottomlands (White 2002b:549).

Lower Archaic materials are rare in the coastal areas along the North Coast Ranges, with only a single well-defined Borax Lake Pattern site found (CA-HUM-513/H). The Duncan's Landing site (CA-SON-348/H) to the south contained deep deposit dated to at least 8600 years B.P. The deposit consisted of large amounts of midden, shell, and both terrestrial and marine mammal remains, but contained few formed tools. Stable isotope analysis of the shellfish remains indicated fall and winter occupation of the site, suggesting a seasonally structured settlement system. While the lack of formal tools makes it difficult to tie the site to either the Borax Lake or Berkeley Patterns, the evidence for seasonal occupation can be used to eliminate the year-round residential system of the Berkeley Pattern, in turn implying a link with the Borax Lake or a hereto unknown pattern (Hildebrandt 2007:90-91).

Central Valley region during the Lower Archaic

The dramatic climate changes at the end of the Pleistocene accelerated the development of alluvial fans and floodplains, resulting in a significant stratigraphic divide between the late Pleistocene and early Holocene. A second episode of fan and floodplain deposition occurred at the beginning of the Middle Holocene, around 7500 years B.P., which presumably covered the majority of earlier archaeological resources in the Central Valley. This may be one of the reasons that—save for a single exception—all

Lower Archaic materials are represented by isolated finds. The one exception, CA-KER-116, is at the southern end of the San Joaquin Valley, and yielded a small assemblage of chipped stone crescents, a stemmed point fragment, a stone atlatl spur, several flaked stone implements, and diverse faunal remains, which were radiocarbon dated to between 9125 and 8400 years B.P. using freshwater mussel shell (Rosenthal, White, and Sutton 2007:151-152).

The presence of large projectile points and atlatl spurs in Lower Archaic deposits suggests a focus on hunting artiodactyls such as deer, elk, and pronghorn antelope. No evidence of plant-based foods or production artifacts have been found in the valley proper, but in the adjoining Sierra Nevada and Coastal Range foothills abundant milling equipment and archaeobotanical evidence implies a reliance on acorn and pine nut resources. Together, these may represent a seasonally structured settlement system of valley hunting sites and upland nut harvesting camps (Rosenthal, White, and Sutton 2007:151-152).

Linguistic Prehistory during the Lower Archaic

The linguistic evidence suggests a predominantly Hokan-speaking population in California during the Lower Archaic. Areas inhabited by other groups or uninhabited at this point were expanded into by Hokan peoples. The exception to Hokan occupation was the Yukian enclave in the North Coast Ranges (Moratto 1984:545-547). The unbroken continuity of the Borax Lake Pattern in the Clear Lake basin suggests that the arrival in the area of Hokan speaking “pre-proto-Pomo” people can be linked with the

beginning of this tradition, but the glottochronological evidence for the divergence of the Pomo languages indicates that proto-Pomo did not develop until much later, 2500 years B.P. This discrepancy makes the archaeological and the linguistic evidence difficult to reconcile (Golla 2007:78-79).

Middle Archaic (7000 to 2500 years B.P.)

The development of modern forests took place in California after about 6000 years B.P. Beginning about 4000 years B.P., the amount of effective moisture increased, resulting in a rise in conifer dominated forests, evidenced by the increase of Douglas fir pollen. Oak pollen levels also reached their peak percentages in most regions as they continued to increase their overall geographic and elevation ranges (West et al. 2007:21).

North Coast Ranges region during the Middle Archaic

Environmental trends that had begun in the early Holocene continued during the Middle Archaic. Oaks continued to expand throughout the Clear Lake basin due to increased moisture and more favorable precipitation patterns. Tanoak and chinquapin also responded by expanding their ranges. The composition of the chaparral plant community, which had been previously dominated by chemise, significantly changed as buckthorn and ceanothus moved into the existing community, displacing the chemise. The amount of sumac also expanded (West 2002:111). The growth rates for tule perch indicate that between 5000 and 3000 years B.P. Clear Lake water temperatures reached their warmest point (White 2002a:27).

Little is known about the early part of the Middle Archaic in the North Coast Ranges. This is due in part to unstable geomorphic processes in the Clear Lake basin, including the inability of the landscape to form soils and thus store archaeological deposits. This mid-Holocene geomorphic perturbation occurred between 6300 and 3200 years B.P. and thus no sites in the area have been found that date to this period; these conditions may have also obliterated the prior record (White 2002b:549). In interior areas that do not seem to have suffered geomorphological shifts, there is still very little evidence from this period, leading Hildebrandt (2007:91) to suggest that archaeologists are not recognizing the Middle Archaic record. Shell middens on the Sonoma County coast contain deposits that date to this period, but lack artifact assemblages that have clear cultural associations with other areas. Without datable shellfish remains or recognizable artifact types such as time sensitive projectile point forms, early Middle Archaic remains in the interior may have been simply overlooked. Another possibility is there was a dispersal of populations during this period and thus the people simply produced less of an archaeological record of their activities (Hildebrandt 2007:91).

The latter part of the Middle Holocene is marked by two distinct cultural traditions in the North Coast Ranges. In the area surrounding the Clear Lake basin, the Berkeley Pattern reappears, represented by the Creager Phase, following the mid-Holocene geomorphic perturbation, while in the other areas of the North Coast Ranges the Mendocino Pattern appears. These patterns seem to have been used by distinctly different cultures. Both the Mendocino and Berkeley patterns represent populations that had some degree of sedentism (Hildebrandt 2007:91-92; White 2002b:549-550).

The Creager Phase (3200-2500 years B.P.) in the Clear Lake basin is the more sedentary of the two, with large, formalized village sites that may have been occupied year round. This sedentism was based on a subsistence system centered on intensive acorn use, hunting of large terrestrial game, and extensive exploitation of the multiple fish runs surrounding Clear Lake. Artifact assemblages from the Creager Phase are elaborate, including a highly developed bone tool industry, leaf-shaped Excelsior and stemmed projectile points, mortars and pestles, baked clay items, and extensive fishing related implements such as harpoons, spears, hooks, and net weights. Impressions of baskets have been found in baked clay and, along with changes in bone awl design, show that there was a variety of types and sizes ranging from loose-weave carrying forms to tight-weave "show baskets" (Hildebrandt 2007:92-93; White 2002b:549).

The Mendocino Pattern appeared around 5000 years B.P. in the North Coast Ranges region, during the mid-Holocene geomorphic perturbation in the Clear Lake basin, and continued through the Upper Archaic. Artifacts common to Mendocino Pattern assemblages include a variety of concave-base, side-notched, and corner-notched projectile points, handstones, millingslabs, cobble tools, and various flake tools (Hildebrandt 2007:91). In areas outside the Clear Lake basin, it replaced Borax Lake Pattern assemblages abruptly with a very different set of subsistence and settlement practices (White 2002b:550). Sites on the Sonoma and Mendocino coasts provide the earliest dates, and usually represent short term residential bases for foraging activities or temporary hunting camps. Surprisingly, these sites indicate a mainly terrestrial subsistence with only minor use of marine resources (Hildebrandt 2007:91).

Dating to a slightly later time, interior sites in the Russian River drainage show a similar pattern to the coastal sites. In the northern areas of the North Coast Ranges, the vast majority of the sites are specialized hunting camps, very different than the previous Borax Lake Pattern upland residential sites (Hildebrandt 2007:91-92). This prompted Hildebrandt and Hayes to suggest that these Mendocino Pattern sites are satellites of central permanent villages in the river valleys that relied on the intensive harvesting and storage of acorns and salmon. Excavation in these valleys has been rare, and this hypothesis remains conjectural (Hildebrandt and Hayes 1993:115-116). As early as 4000 years B.P. a split formed between the northern and southern expressions of the Mendocino Pattern. Interaction with the Berkeley Pattern in the southern North Coast Ranges may have differentiated the Hultman Aspect from the northern Mendocino Aspect (White 2002b:550).

In the Clear Lake basin there are assemblages of both Mendocino Pattern and Creager Phase artifacts that date to the same time periods. The Mendocino Pattern assemblages in the area all come from components in discrete places that contain no midden deposits, instead only the materials characteristic of a brief occupation. In contrast, the Creager Phase sites contain well developed midden deposits, defined house floors, and other indicators of long-term permanent settlements. Based on this evidence, White (2002b: 550) concludes that in the Clear Lake basin the Mendocino Pattern represents nonlocal peoples who only occupied the area for a short period, probably to seasonally harvest fish. The Creager Phase, then, represents the local, permanent inhabitants who controlled the superabundant fish resources and permitted access to it

in exchange for some other commodity from the mobile upland people (Hildebrandt 2007:92-93; White 2002b:550).

Central Valley region during the Middle Archaic

During the beginning of the Middle Archaic, the Central Valley experienced considerable climatic, ecological, and geomorphic shifts. Warmer, drier conditions in central California caused many of the shallow lakes such as Tulare Lake to dry up almost completely. Concurrently, rising sea levels moved the coast inland through the San Francisco Bay into the Central Valley, meeting the Sacramento and San Joaquin Rivers to form a large wetland environment. This, the Sacramento-San Joaquin Delta, achieved a roughly stable form by 6000 years B.P. While there was a period of sediment deposition at the beginning of the period around 7500 years B.P., the alluvial fans and floodplains remained mostly stable (Rosenthal, White, and Sutton 2007:152-153).

The archaeological evidence for occupation in the Middle Archaic in the Central Valley is best represented in the foothills that surround it on all sides. Many of the valley deposits are located under several meters of alluvial deposits laid down after 3000 years B.P. The combined evidence from these areas indicates that there were two distinct sets of subsistence and settlement practices with one centered in the valley floor and the other in the foothills (Rosenthal, White, and Sutton 2007:153, 155).

The Middle Archaic record in the foothills is robust. Characterizing these assemblages is a profusion of cobble tools for pounding, chopping, scraping and milling. Acorns and pine nuts were primary foods. In the foothills of the North Coast Ranges the

assemblages are associated with Mendocino Pattern materials, implying residential mobility. Few artifacts beyond those involved in subsistence activities have been found in foothill assemblages. Flaked and groundstone tools are common, as are side-notched, corner-notched, and concave base dart points, similar to the Mendocino Pattern. Most of the materials for these are local, but some are obsidian from North Coast Range quarries such as Borax Lake. Frequent features in these sites include rock-filled hearths and ovens. In both the North Coast Range and the Sierra Nevada foothills there are burials covered with cairns built of both unmodified stone and milling equipment (Rosenthal, White, and Sutton 2007:153).

On the valley floor there are virtually no cultural deposits that date to the early Middle Archaic before 4500 years B.P. This is primarily due to geomorphic shifts that have destroyed sites or buried them under a considerable amount of sediment. In contrast, the late Middle Archaic is relatively well represented in the archaeological record, with the Sacramento Valley containing fewer sites than the Delta and the San Joaquin Valley. The lowland valley tradition during this period is characterized by a riverine focus to settlement and subsistence (Rosenthal, White, and Sutton 2007:153-154).

There appears to have been year-round occupation of village sites adjacent to wetland and riparian settings. These settlements contain sophisticated material culture, including specialized tool assemblages, trade items, and a large variety of nonutilitarian items such as charmstones, disk ornaments, and shell ornaments. Fishing appears to have become increasingly important as new technologies developed, including gorge

hooks, composite bone hooks, and fish spears. Fish remains are abundant in lowland assemblages. Mortars and pestles were widely used, especially in the Delta and adjacent portions of the Sacramento and San Joaquin Valleys (Rosenthal, White, and Sutton 2007:153-154).

Rosenthal, White, and Sutton (2007:155) argue that this technology seems to have accompanied the development of intensive subsistence strategies and residential stability. Technologies that become common in later periods first appear in the archaeological record during this period in the northern San Joaquin and southern Sacramento Valleys. Among these are baked-clay impressions of fine twisted cordage and twined basketry, basketry awls, simple pottery and other baked clay objects such as disks, sinkers, and round balls used as cooking stones. Stone plummets, bird bone tubes and shell beads are also present in these deposits (Rosenthal, White, and Sutton 2007:154-155).

The most commonly identified material culture tradition of the Middle Archaic is the Windmiller Pattern, dating from approximately 4000 to 2700 years B.P. The primary distinguishing aspect of this pattern is the prevalence of extended burials oriented to the west and containing grave offerings such as charmstones. People using the Windmiller Pattern were primarily sedentary, with extended residential settlements on terraces above freshwater marshes and riparian areas. In Windmiller Pattern assemblages trade items are abundant and there must have been an extensive trade network to facilitate the transportation of these items (Rosenthal, White, and Sutton 2007:154-155). This trade

was focused on acquiring not only utilitarian items but also ceremonial and ornamental ones. Many of these were obtained as finished artifacts rather than raw materials. These items included obsidian from both Napa Valley and Clear Lake sources, *Olivella* and abalone shell beads and ornaments from the Pacific Coast, ashphaltum from southern California, and quartz crystal and alabaster from the Sierra Nevada (Moratto 1984:203).

Another characteristic of the Windmiller Pattern is considerable evidence for feuding or warfare in these burials as many individuals have skull and forearm fractures and lithic points embedded in bones, consistent with wounds inflicted by violence (Moratto 1984:207; Ragir 1972:26, 42, 62, 98, 103). Ulnar trauma, often interpreted as occurring when arms are raised to protect from attack, peaks in the Delta during this period (Willits 2010:108). Further evidence for violence includes trophy taking such as skull caches and postmortem modification of skeletal material into human bone artifacts (Ragir 1972:25, 98, 112, 117; Milliken et al. 2007:113-114). Andrushko et al. (2005:383), working from San Francisco Bay sites, concluded that dismemberment and trophy-taking formed a routine strategy of warfare strategy prehistorically in central California, dramatically increasing around 4000 years B.P.

Moratto (1984:207) suggests based on linguistic evidence that the origins of the Windmiller Pattern lie with the migration of a riverine and wetland cultural group into California from the Columbia Plateau or the Great Basin, settling the Delta by 4500 years B.P. The appearance of this pattern may signify the arrival and subsequent dispersal of

the first Utian-speaking people in California; the linguistic ancestors of Miwok and Ohlone (Moratto 1984:207).

Linguistic Prehistory during the Middle Archaic

With the exception of the Yukian areas in Marin, Sonoma, Lake, and Mendocino counties, at the beginning of the Middle Archaic period, almost all of California continued to be populated by Hokan speakers. Moratto (1984:551) claims that by approximately 5000 years B.P. proto-Pomo had differentiated itself in the Clear Lake basin from other Hokan-stock languages in the North Coast Ranges. However, Golla (207:78-79) disputes this, arguing that the linguistic diversity of extant Pomo languages indicates that proto-Pomo did not emerge much earlier than 2250 to 2500 years B.P. Pomo contains a considerable number of loanwords from Yukian languages, indicating that prior to the development of proto-Pomo, Yukian-speaking populations may have occupied the entire North Coast Ranges, including the Clear Lake basin (Golla 2007:79). The divergence between the two branches of Yukian, Wappo and Northern Yukian, is glottochronologically dated to approximately 3000 years B.P. The split between these languages is usually attributed to the expansion of Pomo groups into the Russian River Valley, but it is difficult to reconcile the later date of Pomo diversification with the Wappo – Northern Yukian divergence, making this relationship questionable (Golla 2007:81).

Around 4500 years B.P. a population speaking Utian, a Penutian language directly ancestral to the Miwok and Ohlone, entered the Sacramento Valley. The arrival of this

new population is marked archaeologically by the appearance of the Windmiller Pattern and a new emphasis on riparian and wetland utilization. Using linguistic and material culture similarities, the origin of the Utian population is hypothesized to have been either the Columbian Plateau or the Great Basin (Moratto 1984:552). The reconstructed terms for plants and animals in proto-Utian indicate that it was spoken in the Sacramento-San Joaquin Delta. This provides further evidence linking the Windmiller Pattern with Utian speakers (Golla 2007:76-77). The foothills of the North Coast Ranges may have been the intersection of Utian speaking populations who occupied the valley floor equipped with Windmiller Pattern material culture complexes and Yukian speaking populations in the upland areas using Mendocino Pattern material culture complexes.

Upper Archaic (1500 to 2500 years B.P.)

At the beginning of the Upper Archaic pollen cores demonstrate that there was a rise in the numbers of Douglas fir and tanoak. This indicates that the predominant climate was cooler and wetter than during the Middle Archaic. These conditions probably manifested as more moderate temperatures throughout the year with more precipitation during the winter. A sharp increase in Douglas fir at approximately 2500 years B.P. indicates that the average storm tracks probably shifted southwards. More evidence for increased rainfall comes from the shift from brackish to fresh water species of diatoms from cores marshes in Suisun Bay. This shift reversed to brackish species approximately 700 years later (West et al. 2007:22-24).

North Coast Ranges region during the Upper Archaic

The analysis of fish remains in Clear Lake suggests that there has been a slow decline in the water temperatures of the lake, beginning approximately 3000 years B.P. and continuing to the present. At the same time, there was a drop in the amount of oak pollen relative to pine and a decline in woody shrubs like ceanothus and a corresponding increase in alder and willow (White 2002a:27). Subsequent to the decline in oaks there was a slight increase in firs and then general environmental stability up to the modern day (West 2002:111).

In the North Coast Ranges there is not a distinct shift in material culture between the Middle Archaic and the Upper Archaic. Both the Mendocino and Berkeley Patterns continue to be the dominant traditions in the region. Around 2600 years B.P. the Creager Phase of the Berkeley Pattern becomes the Houx Phase. This has many of the same characteristics as its predecessor, for instance leaf shaped Excelsior points, contracting stem Houx points, a highly developed bone tool industry, and extensive fishing-related implements, such as harpoons, spears, hooks, and net weights. Mortars and pestles form the predominant type of milling equipment (Hildebrandt 2007:92-93). The Houx Phase shows considerable interaction with Central California, as evidenced by stylistic and technological similarities as well as exchange markers. The practice of extended burial ties it to the Windmiller Pattern (White 2002b:549).

During this period, circa 3000 to 1200 years B.P., the production and distribution of obsidian bifaces from the Borax Lake source reached its greatest intensity (Hildebrandt

2007:93). Around 2500 years B.P. the rectangular shell bead trade disappeared and was replaced by a new important medium of exchange, *Olivella* shell disks, saddles, and saucer beads (Milliken et al. 2007:114). At the same time new circular *Haliotis* ornaments appear. The combination of these factors demonstrates the extent of the reliance on and the scope of regional trade networks, as well as suggesting complex and shifting ceremonial practices (Hildebrandt 2007:93).

It appears that beginning around 2500 years B.P. Berkeley Pattern-using people migrated out of the Clear Lake basin to the west, through the Russian River valley and into the Santa Rosa Plain before reaching the Sonoma and Mendocino coasts around 2000 years B.P. (Hildebrandt 2007:93; White 2002b:550). This involved the replacement of the Mendocino Pattern mobile residential strategies with a more sedentary system emphasizing the intensive use and storage of acorns, demonstrated by large house structures associated with multiple storage pits. These two patterns continued to coexist as in the Clear Lake basin, with the Mendocino people dispersed through the upland areas and the Berkeley people occupying the lowland river valleys. Assemblages from these areas include Houx Phase artifacts and high frequencies of Konocti and Borax Lake obsidian, indicating continuing ties with the peoples in the Clear Lake basin (Hildebrandt 2007:92-93). The Houx Phase materials also spread to the east of Clear Lake along the Putah Creek, Cache Creek, and Stony Creek drainages (White 2002b:546).

This population movement has been identified by many researchers as the expansion of proto-Pomo-speaking populations out of their Clear Lake origin point

(Hildebrandt 2007:93; White 2002b:550). Previously it had been assumed that this expansion was made possible by the intensification of acorn use, but White (2002b:550-552) argues that this movement was propelled by situations that existed outside of the Clear Lake basin. The Houx expansion probably occurred through the establishment of colonies adjacent to particular resources that could be exploited and commoditized into a Houx trading network. The contemporaneous presence of Mendocino Pattern assemblages with Berkeley Pattern ones implies that this was mutually beneficial to both populations and was not an abrupt change due to its roots in the previously established regional exchange and intergroup relationships. White (2002b:550) identifies the isolated Northeastern (Salt) Pomo as an example of this pattern, originally established as a colony to control the regionally important salt deposits.

Near the end of the Upper Archaic, circa 1900 years B.P., a new phase of the Berkeley Pattern spreads out from the Clear Lake basin. The Redbud Phase serves to connect the Upper Archaic Period with the Emergent Period (White 2002b:549). This tradition may be the result of influence and colonization of Miwok-speaking populations from the northern San Francisco Bay area. Redbud assemblages in the southwestern Clear Lake basin show strong connections to the North Bay. These include a large number of Napa Valley source obsidian artifacts, narrower projectile points such as Excelsior "C" series bipoints, ceramic figurines, punctuate decorated bone hairpins, bipointed plummets, and a lack of wide-stemmed points like the Houx point (White 2002b:551). White (2002b:551) ties this material culture shift to the immigration of the ancestors of the Lake Miwok into the southern Clear Lake basin. He also takes pains to

point out, however, that it may be archaeologically impossible to differentiate between such groups as the proto-Western Pomo, proto-Wappo, and proto-Western Miwok, as they all employed a basic Berkeley Pattern material culture and traded and interacted extensively (White 2002b:551).

Central Valley region during the Upper Archaic

The shift to cooler and wetter environmental conditions caused lakes that had dried or diminished during the Middle Archaic to increase, filling to spill levels by 3000 years B.P. These same conditions caused the freshwater areas of the Sacramento-San Joaquin Delta to spread towards the San Francisco Bay estuary. The increased storms in the winters also resulted in floodplain and alluvial fan deposition, forming many of the current surface soils in the Central Valley (Rosenthal, White, and Sutton 2007:155-156; West et al 2007:23-25).

The archaeological record of the Upper Archaic in the Central Valley is represented and understood more completely than that of previous periods. New specialized technologies developed and proliferated, including the elaboration of bone technology leading to new types of tools and implements like wands, tubes and ornaments, and manufactured trade items such as saucer and saddle *Olivella* beads, *Haliotis* ornaments, obsidian bifacial blanks, and fine ceremonial blades. In the southern Sacramento Valley raw and modified obsidian was obtained from sources in the North Coast Ranges, primarily the quarries around Clear Lake and from Glass Mountain in Napa Valley.

Specialists in lithic production working near these sources produced the lanceolate bifaces that were widely distributed through the Central Valley trade networks (Rosenthal, White, and Sutton 2007:157).

Polished groundstone plummets are often found in the areas around the Delta, both as part of assemblages and as arranged caches. In the areas surrounding the Delta, including the southern portion of the Sacramento Valley, mortars and pestles formed the prime milling technology, reflecting a heavy reliance on acorns, while in the adjacent foothills handstones and millingslabs are dominant and have been found in assemblages containing acorn hulls and pine nut shells. An important aspect of this period is the pronounced cultural diversity present in the region represented by different mortuary practices, artifact styles, and other material culture elements (Rosenthal, White, and Sutton 2007:156).

Two main cultural traditions, the Windmiller and the Berkeley Patterns, were present in the region comprised by the Sacramento-San Joaquin Delta and the adjacent southern Sacramento Valley and northern San Joaquin Valley. Windmiller Pattern sites, signified by their distinctive west facing extended burials, continued in the areas along the western and southern margins of the Sacramento-San Joaquin Delta and riverine and axial marsh areas in the San Joaquin Valley (Rosenthal, White, and Sutton 2007:155-157). The Berkeley Pattern may have developed from the Windmiller Pattern on the shores of the San Francisco Bay. The expansion of the proto-Ohlone-speaking population into the

San Francisco peninsula and East Bay areas involved pushing out or absorbing the resident Esselen populations.

The interaction between these groups may have produced a fusion of the riparian and wetland emphasis of the Windmiller, carried by the proto-Ohlone, with the Esselen acorn resource focused material culture, to produce the Bay Area expression of the Berkeley Pattern by 3500 years B.P. (Moratto 1984:553-554). This tradition then spread out from the San Francisco Bay area into the Sacramento-San Joaquin Delta and the adjacent areas of the Sacramento and San Joaquin valleys, possibly by population movement of proto-Miwok-speaking people or through cultural diffusion or a combination of both (Rosenthal, White, and Sutton 2007:155-157).

White (2002b:547, 549) argues that the Mostin Phase of the Berkeley Pattern predates this cultural merging, which may mean that a similar tradition was used by the Esselen populations prior the Utian migration. By 2700 years B.P. large mounded villages containing Berkeley Pattern material culture appear in the southern Sacramento Valley and the northern portions of the Delta. The Berkeley Pattern is not a direct replacement of the Windmiller Pattern and there is only one site, CA-SAC-107 in the eastern Delta, where a Berkeley-associated stratigraphic layer covers a Windmiller layer. These mounded villages represent areas of extensive habitation and contain large numbers of fire-cracked rock piles, hearths, rock-lined earth ovens, house floors, and considerable midden accumulation. Subsistence patterns of these villages focused on intensive harvesting of acorns and marine and terrestrial faunal resources. Contrasting

with Windmiller burials, the Berkeley inhumations are typically flexed with fewer grave offerings (Rosenthal, White, and Sutton 2007:155-157). Berkeley Pattern assemblages are differentiated from Windmiller ones by larger amounts of mortars and pestles, an elaborate bone tool industry, large, diagonally-flaked concave-based points, and different forms of *Olivella* and *Haliotis* shell beads and ornaments such as saddle beads and pointed ornaments (Moratto 1984:208-210).

Linguistic prehistory during the Upper Archaic

The general consensus is that speakers of proto-Pomo formed the populations that spread the Berkeley Pattern through the North Coast Ranges. Reconstructed terms in proto-Pomo for various plant species argue for their primary occupation of the valleys and middle elevations of the North Coast Ranges, matching the observed residential system of the Berkeley Pattern, but not the Mendocino Pattern. The linguistic dates for proto-Pomo and their diversification around 2600 years B.P. correspond roughly with the archaeological dates for the expansion of the Houx phase peoples out of the Clear Lake basin. Unfortunately, this still is later than the glottochonological dates for the split between Northern Yukian and Wappo, but the imprecise nature of linguistic dating may account for the difference (Golla 2007:81). Either way, the proto-Yukian speakers were present in the historical territories that speakers of Wappo and Northern Yukian occupied, as well as the intervening area. The loss of significant portions of their territory may have been due to the expansion of the proto-Pomo (White 2002b:542-544).

At the beginning of the Upper Archaic, Utian/proto-Miwok speakers expanded into Marin and southern Sonoma counties from the area north of San Pablo, Suisun, and Grizzly bays, which they had occupied since their spread from the Sacramento-San Joaquin Delta a millennium earlier. After approximately 2500 years B.P., there was a secondary expansion from these western areas to the northeast through the Napa Valley to the southern shores of Clear Lake (White 2002b:540-541). Terms for redwood and black oak in the western Miwok languages were borrowed from a Yukian language, showing that Yukian speakers were the main occupants of the southern North Coast Ranges and north San Francisco Bay areas before the proto-Miwok arrival (Moratto 1984:555). Ethnographically observed cultural similarities between the Lake Miwok and the Southeastern Pomo suggest that the Lake Miwok split from Coast Miwok after the Pomo spread into the Russian River basin (White 2002b:541).

Concurrently, the Berkeley Pattern was spread by proto-Miwok or proto-Ohlone speakers from the San Francisco Bay area back into the Sacramento-San Joaquin Delta. This could have occurred through population movement, either replacing other Utian speakers or absorbing them, or through cultural diffusion. The glottochonological evidence points to this being a Miwok movement, and correlates temporally with the split between the Eastern and Western branches of the Miwok language family before 2500 years B.P. (Golla 2007:76-77; Moratto 1984:555-557).

Emergent Period (1500 to 150 years B.P.)

Pollen cores show that during the late Holocene at elevations above Clear Lake in the North Coast Ranges, Douglas fir increases with a corresponding decrease in oaks. At the end of this period, the trend may be partially a result of the differing land use and management strategies employed by Euro-Americans compared to Native Californian patterns (West 2002:111). Tree ring data from areas adjacent to the Sacramento River has shown that since 1081 years B.P. there has been considerable runoff and few drought years identified. Only six years of drought had a lower runoff flow than 1977 A.D., the driest year for which reliable records exist. Two of these drought years fall within the Medieval Climatic Anomaly, but this period was by no means the most significant drought in Northern California in the last millennium. The Sacramento watershed may have actually had an improvement in water flow during the period when the Southwest was being impacted by a severe drought. This is borne up by the diatom studies of Sacramento-San Joaquin Delta sediments that show the wetlands filled with brackish water after 1800 years B.P. and freshwater from 1250 years B.P. into the historic period (West et al. 2007:23-24).

The environments that formed during the Emergent period are in many ways the ones that the first Europeans in California experienced. However, the environments in California were dramatically shaped by controlled burning of the landscape and other native management strategies. With the introduction of European diseases prior to the initial colonization, a large portion of the Native Californian population had been wiped out, which disrupted the management of the environment and drastically altered the

ecology. Large game populations exploded, causing grazing patterns to shift, and the lessened use of controlled burning practices resulted in changes in the distribution of plant species. This effect was particularly felt in the balance between meadows, chaparral, and woodland environments (Lightfoot and Parrish 2009:20-28; 117-118; Preston 1997:260-270).

North Coast Ranges region during the Emergent Period

The beginning of the Emergent Period in this region is characterized by a continuation of both the Redbud Phase of the Berkeley Pattern and the Mendocino Pattern. In the area east and west of Clear Lake the Redbud Phase was dominant, while in the Eel River watershed the Mendocino Pattern continued (White 2002b:547-549). Between 1500 and 1200 years B.P. the Augustine Pattern cultural tradition spread into the North Coast Ranges region and replaced or merged with the Redbud Phase. The most important marker of this pattern is corner-notched Rattlesnake series projectile points, which represent the introduction of bow and arrow technology (Hildebrandt 2007:94-95, 97; Justice 2002:402-409). This tradition is characterized by a large complex of ceremonial accoutrements including *Olivella* and clamshell disk beads, magnesite cylinders, "banjo" *Haliotis* ornaments, bird bone whistles and tubes, and flanged steatite pipes.

Unlike the Sacramento-San Joaquin Delta, where the entire complement of Augustine Pattern traits is found, there seems to have been differential adoption in the

southern North Coast Ranges, with some groups continuing to use the sedentary settlement system begun in the Berkeley Phase while others show mobile residential systems and seasonal occupation of areas such as the Sonoma coast. In the interior valleys of the North Coast Ranges, there seems to be increased use of previously underused habitats and more intensive use of the local resources. This does not seem to be a seasonal occupation as seen on the coast, instead it may represent a strategy of small sites, used for exploiting particular resources, connected to larger, centralized villages. It is generally assumed that a similar pattern would be present at Clear Lake, but no large-scale excavations of Augustine Pattern sites have been completed (Hildebrandt 2007:94-95). The Clear Lake aspect of the Augustine Pattern, present in the Clear Lake basin and the Russian River Valley, is characterized by stylistic and technological traits such as Excelsior series and Clear Lake Corner Notched points, bulbous-ended pestles, shell beads, nonlocal Napa Valley obsidian, and rock cairn cache and grave markers that link it with the Berkeley pattern (Fredrickson 1984:525; Justice 2002:402-409; White 2002b:550).

North of Clear Lake and the Sonoma-Mendocino County line, the predominant material culture tradition is the Gunther Pattern. This is primarily associated with a coastal and riverine settlement system with a high degree of sedentism. Many of the characteristic artifacts are associated with marine resource procurement, such as extensive toolkit for fishing marine mammal hunting. This included bone and antler spears, composite harpoons tipped with concave-based points, and various hooks. The Gunther barbed projectile points represent the introduction of bow and arrow

technology to this area between 1500 and 1000 years B.P. (Hildebrandt 2007:93-94). There is a considerable variety in the ground and polished stone artifacts, often quite artistically elaborated, which are present in Gunther Pattern assemblages. These include flanged pestles, finely-crafted mauls, notched netweights, steatite bowls, zoomorphic clubs, and polished stone adze handles. Other important artifacts include large obsidian blades and dentalium shell beads, both of which were used for ceremonial purposes ethnographically. The obsidian that has been found in Gunther assemblages has almost exclusively been sourced to the Medicine Lake Highlands area as opposed to the Clear Lake source, implying that this pattern represents populations with strong ties to the north (Hildebrandt 2007:93-94).

Around 800 years B.P. there was a significant shift in the nature of exchange in central California. There was a collapse in the trade and production of obsidian bifacial blanks from quarry sites in the Clear Lake basin and Napa Valley. This is replaced by the transport of raw obsidian cobbles and rough flake blanks, primarily from Napa, to Sacramento Valley, resulting in very different lithic manufacturing remains at sites in that area. Obsidian quarrying at the Clear Lake basin sources becomes rarer and it is found in a more geographically limited area. At the same time the production of shell beads seems to become more decentralized, with bead blanks being traded from the coast and the final products manufactured locally. This new method of bead manufacture may relate to the development of a monetized exchange system (Hildebrandt 2007:97; Rosenthal, White, and Sutton 2007:159).

Central Valley region during the Emergent Period

In the Central Valley, the archaeological record for the Emergent period is the most complete and comprehensive of any period available as well as containing the most diversity. Many of the technologies and cultural traditions that were dominant in previous periods disappeared after 1000 years B.P., being replaced by new traditions similar to those which existed at the time of contact. In the southern portion of the Sacramento Valley and the Delta, this new tradition was the Augustine Pattern, which first appears in the southern Sacramento Valley around 1300 years B.P. The first phase of the Emergent Period, the Lower Emergent, is marked by the appearance of Augustine Pattern artifacts, most notably banjo-type *Haliotis* ornaments, elaborately incised bird bone tubes and whistles, rectangular *Olivella* sequin beads, and flanged steatite pipes. Mortuary practices in this period shift to pre-interment grave pit burning with tightly flexed burials and often include grave offerings of shell beads and ornaments and mortars that have been ritually "killed." Cremation appears to have been reserved for individuals of high status. The second phase, the Upper Emergent, is a continuation of Augustine Pattern, with artifacts such as smaller corner-notched and desert series projectile points like the Delta side-notched, *Olivella* lipped beads, clam disk beads, bead drills, magnesite cylinders, and hopper mortars (Rosenthal, White, and Sutton 2007:157-159).

The inhabitants of the Sacramento Valley and the San Joaquin-Sacramento Delta had a sedentary settlement system. Large, populous, mounded villages were established along the rivers, near to places where fish weirs could be constructed. These areas often

contain extensive middens, giving considerable insight into the local subsistence economies. The emphasis of these economies was for the most part regionally variable; however, fish and harvested plant foods are commonly dominant, with their importance increasing through the period. Large quantities of fish bone and diverse mammal and bird remains are included in most of the Emergent assemblages. The fishing toolset, which included multiple types of harpoons, bone fishhooks, and gorge hooks, becomes more elaborate and diverse than in earlier periods (Rosenthal, White, and Sutton 2007:159).

Between 1000 years B.P. and 700 years B.P. the bow and arrow replaces the atlatl and Gunther barbed projectile points become common throughout the Sacramento Valley (Rosenthal, White, and Sutton 2007:158-160). In the western portions of the valley there is overlap between Gunther barbed points and Rattlesnake points (Justice 2002:410-420). A locally developed style of highly serrated projectile point, the Stockton series, appears in the Delta during the Lower Emergent and spreads into the southern Sacramento Valley and into the San Francisco Bay area (Justice 2002:352-360; Rosenthal, White, and Sutton 2007:158). Village middens show that the use of acorns, pine nuts, and manzanita berries was extensive, and that, as the period progressed, small seeds became increasingly important as food. Mortars and pestles were the dominant form of milling tool used in the Lower Emergent, and by the Upper Emergent hopper mortars had become common (Rosenthal, White, and Sutton 2007:158).

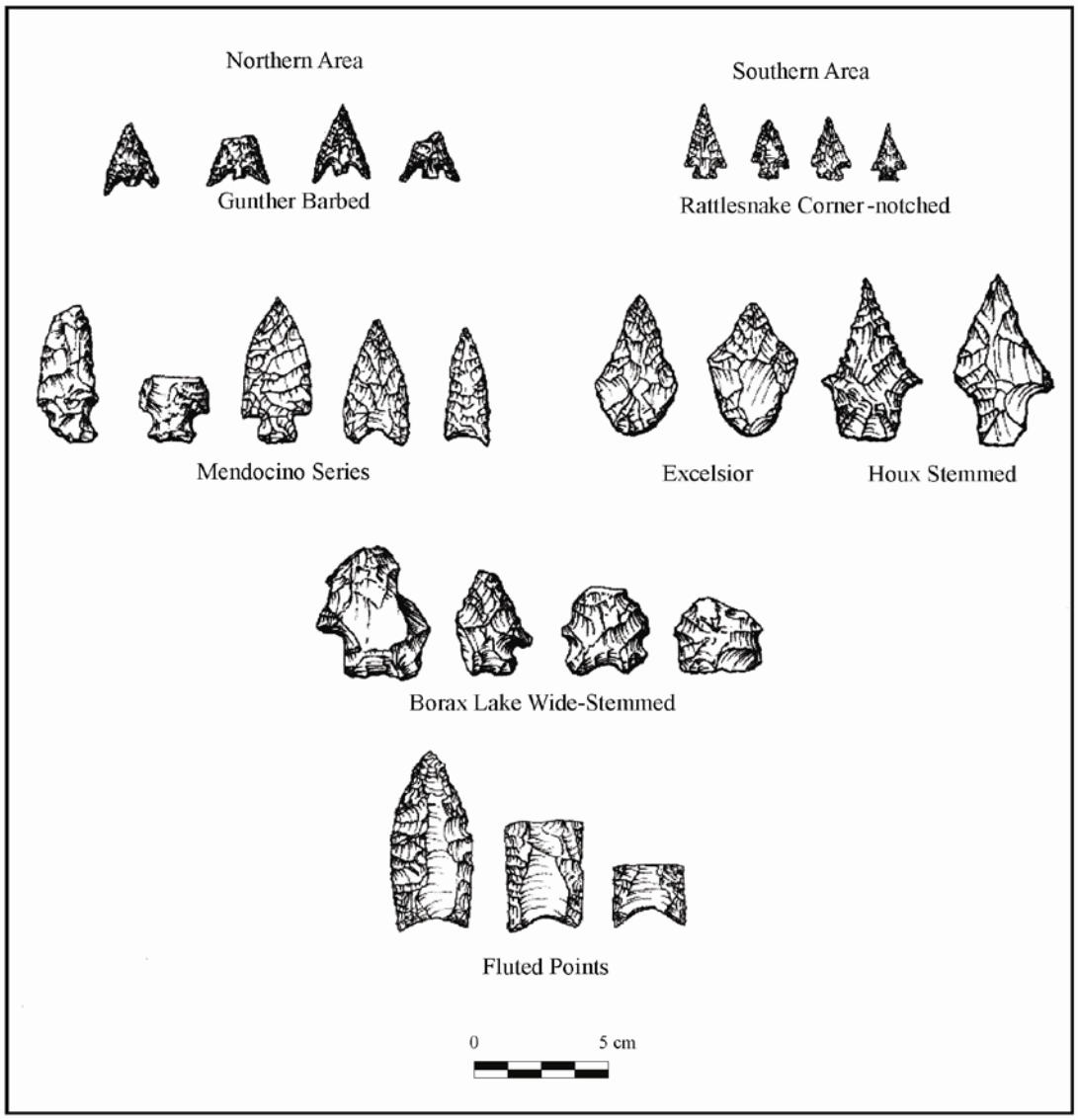

Figure 10. Projectile point sequence for northwest California (Hildebrandt 2007:89)

Linguistic Distribution Leading up to Contact

The most dramatic shift in the linguistic patterns of the southern North Coast Ranges and the western Sacramento Valley is the arrival of a new Penutian population from the north, probably Oregon, speaking Wintuan family languages. The major split in this group occurred approximately 1500 years B.P. between Northern Wintuan, comprised of Wintu and Nomlaki, and Southern Wintuan or Patwin. Similarities in the

phonological and grammatical systems of Wintuan and Pomoan language families suggests a long and important relationship between their speakers, evidenced by the presence of certain shared linguistic traits unique in western North America. Reconstructed proto-Patwin does not have terms for the distinctive flora and fauna of Central California, which were adopted from the Miwok languages present in the area (Golla 2007: 77-78; Moratto 1984:562-563). This Patwin borrowing from Miwok and vice versa suggests the Lake Miwok were once widespread through the southern foothills of the North Coast Ranges and lost much of this territory after the Patwin incursion, while the Bay Miwok were displaced from the area around Suisun Bay to locations around Mount Diablo (Moratto 1984:562; White 2002b: 541).

Patwin-speaking populations may have assimilated more than simply linguistic traits; they may have incorporated some populations of Pomo and Miwok (Moratto 1984:562). This Patwin arrival in the region appears to correspond roughly with the advent of the Augustine Pattern in the North Coast Ranges and the Sacramento Valley. While it is likely that the Patwin had influence on the development of the Augustine Pattern, they probably did not bring the entire suite of characteristics with them, instead combining certain elements of their culture with that of previous residents and neighboring groups (Golla 2007:78). While Moratto (1984:563) suggests that traits such as the bow and arrow, harpoons, flanged steatite pipes, and pre-interment burning were brought by the Patwin, Golla (2007:78) identifies the elaborate riverine fishing technology and other complex features of the Augustine Pattern as already present in the region.

IV. ARCHAEOLOGICAL CONTEXT

INTRODUCTION

Three sources of data were searched to discuss the archaeological and cultural resource studies and projects in and around the IV/WRRA. Christopher Lloyd, archaeologist at the BLM Ukiah Field Office, searched the BLM records and GIS files for information that pertained to the area. He provided reports and site records in paper format and GIS map layers containing the locational data for the known sites. I performed a records search at the Northwest Information Center, and added more sites and reports. Finally, I completed a collections search with assistance from Erica Gibson of the David A. Fredrickson Archaeological Collections Facility at Sonoma State University. This led to a review of a large number of flaked lithic artifacts and supporting documentation that had been collected previously by Nancy French.

PROJECTS AND SITES WITHIN THE IV/WRRA

The earliest recorded sites in the IV/WRRA were documented by Nancy French and H. Keesling, who were conducting a preliminary survey for the BLM in August of 1975. Six sites were recorded during this period; all were either in roads or in or adjacent to campgrounds. Each of these sites was represented by a surface scatter of obsidian

flakes, point fragments and flake tools. One site, CA-LAK-465, located on a large flat bisected by the road to Stone Glade, consisted of a very large flake scatter with one denser area of flakes, points, and tools. None of these sites were recorded as containing any habitation debris, groundstone artifacts, or any artifact material besides obsidian (French and Keesling 1975a; 1975b; 1975c; 1975d; 1975e; 1975f, 1975g).

The only major project aimed at identifying prehistoric cultural resources in the IV/WRRA was undertaken by Nancy French in the summer of 1976 for the BLM (French1977:1). The IV/WRRA was smaller at the time, only encompassing 34000 acres of noncontiguous property as compared to its current size of almost 50000 acres. A records search for the area was performed by French in 1976 at District Clearinghouse 01 for the Lake County files and District Clearinghouse 03 for the Colusa County files (both now included in the Northwest Information Center of the Historical Resources Information System). Aside from the archaeological sites previously recorded by Robert Orlins in the adjacent area, now beneath the Indian Valley Reservoir, the search revealed six sites within the recreation area boundaries; CA-LAK-455, CA-LAK-456, CA-LAK-457, CA-LAK-465, CA-LAK-470 (previously recorded as 460), and CA-COL-34 (French 1977:6). In order to gauge impacts of recreation and possible geothermal development, French and Richard Stradford, summer employees at the BLM, performed an archaeological survey of samples of the area totaling 4000 acres (French 1977:1).

For this study a series of survey blocks were plotted across the study area, each 160 acres in size, which was considered large enough to include a representative sample of

the landscape but small enough to accomplish a thorough surface survey. Using a random number table, 15 blocks were selected for the project, numbered B-1 through B-15 (French 1977:6). In addition to these blocks 10 more, numbered I-1 through I-10, were chosen "intuitively" to investigate environmental areas not covered by the random blocks and to increase the sample size in areas considered favorable for site occurrence; i.e., on flat areas near permanent water sources (French 1977:9).

French recorded 25 sites within the IV/WRRA. The majority of these (22) were within the survey blocks that she established beforehand while 3 others were found while traveling between survey blocks (French 1977:11, 27). The recorded sites are exclusively composed of lithic concentrations lacking any midden components. The vast majority of the lithic flakes in these sites were said to be obsidian, although basalt and chert tools and chipping waste were also noted. A single site (CA-LAK-738) contained only chert in its assemblage. Site size was quite diverse, ranging from small condensed sites 10 m. (35 ft.) in diameter to large, more dispersed sites 200 m. (650 ft.) long.

The environmental settings of the recorded sites were very similar, consisting of chaparral floral communities in association with meadows and oak savannas. The majority of sites were located near permanent springs and creeks and additional sites were located near seasonal water supplies. Only six were not near to sources of water. Most were on flats, midslope terraces, ridges, saddles and stream confluences. French noted that all the sites were in upland areas surrounding major valleys, but this is more

of a reflection of the survey area and study area; which did not include any large portions of valley floors (French 1977:15, 16-17, Map 1).

The density of sites recorded in this project is 1 site for every 182 acres. The density north of Indian Valley is lower, only 1 per 240. Site density was highest for the region between Walker Ridge and Bear Valley. Fourteen sampling blocks or 2240 acres were surveyed in this area, containing 16 sites or 1 site per every 140 acres. This area also contained the sampling block with the highest site density, I-I, which had 4 sites or 1 site every 40 acres. The survey blocks were also, by coincidence not design, distributed across different proposed tribelet territories. There were 10 blocks in proposed *Ol'po-sel* territory, 4 in *Tebti-sel* territory, 9 in *Yawi-sel*, 3 in *Chuhel-mem* territory, and none in *Lol-sel*. Ethnographic intertribelet trails recorded by Fredrickson et al. (1978:26-27, Map 2, 3) and Henry Mauldin (1971, cited in Orlins 1971:31) pass through or near six survey blocks: I-2, I-10, B-1, B-5, B-13, and B-15.

Only one site contained groundstone artifacts: CA-LAK-736 situated adjacent to a spring fed drainage on a gently sloping south-facing ridge above Benmore Canyon in block B-14. The assemblage at this site was mainly comprised of abundant obsidian flakes as well as some unidentified groundstone. Other artifacts included a millingslab and a handstone, scrapers and choppers, and a single obsidian Excelsior type projectile point. On the basis of this diagnostic point, French (1977:15) dates this site to between 5000 B.P. and 1500 B.P., although others would constrict the date range of Excelsior type points to between 4000 B.P. and 1500 B.P. or even less (Justice 2002:271).

There was a considerable amount of prehistoric material and signs of human occupation that French did not record as sites. Instead, she noted this as "generalized use" and presented it as a presence/absence check in each of her survey blocks. Four of these were deemed to have no evidence of prehistoric use: B-4, B-6, B-7, and B-8. Block B-4 is located on the steep western slope of Stanton Creek canyon, B-6 is located on the steep northeastern slope of Long Canyon west of Indian valley, and B-7 and B-8 are both located on ridges between steep canyons east of Indian Valley (French 1977:6-11, 16-17, 27). French (1977:17) suggested that the primary factor for the lack of any evidence of prehistoric use is the steepness of the terrain. This may a part of the reason, but both erosional events and poor ground visibility in thick chaparral are factors that cannot be dismissed at this time.

Diagnostic projectile points recorded by French (1977:24-26) point to a long occupation of the IV/WRRA. In all, she collected 71 projectile points, preforms, and point fragments. Of these 38 were stylistically diagnostic, including: 3 Borax Lake widestem type points (8000-5000 years B.P.), 8 Mendocino Concave base type points (5000-2500 B.P.), 3 Houx contracting stem type points (4500-1500 BP), 9 Excelsior type points (4000-1500 BP), and 15 Rattlesnake corner notched type and Clear Lake Corner notched type points (850-150 B.P.) (David A. Fredrickson Archaeological Collections Facility 2010; French 1977:24-26; Justice 2002:101-111, 155, 165-167, 253-255, 265-275, 402-410;). All points were made of obsidian except for one chert Houx type, one rattlesnake corner notched, one basalt Houx type, and one basalt Mendocino concave type (French1977:26; DAFACF 2010).

No other major projects have been undertaken within the study area. Several smaller projects have investigated parts of the IV/WRRA but only a few have yielded sites. A series of archaeological and cultural clearances by BLM archaeologists Marlene Greenway, Julie Burcell, and Christopher Lloyd have not produced any additional sites (Lloyd 2010: pers. comm.). Several isolates have been identified by BLM employees, including a Excelsior type Konocti obsidian point, and a Gunther barbed type Borax Lake obsidian point, both found in the southern area of the property on the ridge above Sulphur Creek (Johnson 1984; Mangan 1982). The project that produced the most data and yielded the most artifacts was "An Archaeological Investigation at CA-COL-54" by Robert Jackson of the Anthropology Laboratory at Sonoma State University (now the Anthropological Studies Center), in which five 1x1 m. (3.25x3.25 ft.) excavation units were dug in a site that was going to be impacted by a Caltrans construction of a passing lane on California State Route 20 at the extreme southern extent of the IV/WRRA. This site produced a number of obsidian flakes from the Borax Lake, Konocti, and Napa Glass Mountain obsidian sources (Jackson 1978:2-5, 17). Jackson (1978:17) concluded from the location of the site on a flat area near a spring and its contents that it represented a stopping place along the interregional trail route that the modern California State Route 20 follows.

PROJECTS OUTSIDE THE IV/WRRA

While comparatively little research has been completed within the study area, there has been much more in adjacent and neighboring areas. The first archaeological investigation in the surrounding area was done by Alfred Kroeber (1932:350) when he recorded the village of *Tebti*. According to this, "Old *Tebti*" was located on a lower terrace and closer to the confluence of Long Valley Creek and North Cache Fork Cache Creek than "New *Tebti*", at the time also called Cache Creek Rancheria. The village is described as having a dancehouse and at least 10 housepits, but it is unclear whether this description concerns the early village, the later village, or both (Jackson 1980:1, 6; Kroeber 1932:350). This tradition of casual recording of archaeological resources continued in the 1950s and 1960s when Lake County Historian Henry Mauldin recorded a series of sites in the area. Of particular note are the *Lol-sel* principal village of *Ali-matinbe*, CA-LAK-421, at the top of Long Valley several hundred meters (800 ft.) outside the study area, which he recorded as containing 128 housepits and 5 dance or sweat houses (Mauldin 1968); and the *Ol'po-sel* principal village of *Tlotli*, CA-LAK-153, in Indian Valley, where he recorded 17 housepits (Orlins 1971a:32, 48-49). Mauldin also re-recorded the site of *Tebti,* CA-LAK-270 (Jackson 1980:1), and Robert Jackson (1980) later nominated it to the National Register of Historic Places.

Indian Valley

The most extensive research project in the surrounding area was the survey of Indian Valley in anticipation of its flooding to form Yolo County's Indian Valley

Reservoir. Due to the nature and size of the project, the entire area was surveyed rather than a representative sample or portions where sites were predicted to exist. The project was headed by Robert Orlins of the Foundation for Archaeological Research in Davis, California, and included anthropological and archaeological research, a report on the history of Indian Valley, and a botanical report on the valley and vicinity (Orlins 1971a:3-4, 74-101, 105-113). While not contracted to survey portions of the BLM property that surrounds the reservoir, the survey area does cross into federal lands at several points. It is unknown at this time if any of the sites found in this survey in the IV/WRRA exist above the waterline, but it seems from the plotting of site locations that a small number (CA-LAK-335, -337, -342, -344, -355, -367,and -370) may be accessible.

The survey technique employed in Orlins' study was to have individual survey areas based on the topography rather than using arbitrary transects. One crew member covered the bottom lands of the valley, another surveyed the terraces at the edge of the valley to the chaparral-covered slopes, and two more surveyed the hill sides up to the 1,490 ft. elevation contour. Little collecting was done as Orlins hoped that a more systematic collection regime would follow this project (Orlins 1971a:36-38). An exception is CA-LAK-309 where Long Canyon Creek enters the west side of the valley. This site was selected to be systematically sampled and was mapped, gridded, and all artifacts collected and mapped with their exact locations to maintain relationships. Soil samples were collected from each grid intersection (Orlins 1971a:37).

The survey resulted in recording a total of 72 prehistoric or native historic sites. Four of these, LAK-144, -149, -152, and -153, had been previously recorded by Henry Mauldin in 1951 and 1952 (Orlins 1971a:38; Orlins 1971b; 1971c; 1971d; Orlins and King 1971). Fifty-six sites in Indian Valley were surface occurrences or artifact scatters, 16 were midden sites, and an additional two, CA-LAK-144 and -149, contained midden when initially recorded by Mauldin but the midden was subsequently removed (Orlins 1971a:38, 49). For the most part, the sites were distributed in three general areas: the first was at the north end of the valley along the course of Stanton Creek; the second was halfway down the valley near Long Valley Canyon on either side of the valley; and the third surrounded the village of *Tlotli*, CA-LAK-153, at the southern end of the valley near the confluence of Cold Spring Creek and The North Fork of Cache Creek (Orlins 1971aa:40-41).

The 18 recorded midden sites in the valley were distributed across the local biomes. Six were present in the oak savanna of the valley floor, an additional six in the chaparral hillsides, and six more in the mixed blue oak and gray pine woodlands. All were located near to water sources on generally level ground. Half of the midden sites were recorded as containing housepits, between 45 and 48 in total, which were mainly 3-4 m. (10-14 ft.) in diameter and one, in CA-LAK-327, that was 6 m. (20 ft.) in diameter. The majority of these sites contained milling equipment of various types, including handstones and millingslabs, mortars and pestles, and bedrock mortars. One site, CA-LAK-372, contained flaked bottle glass indicative of historic-era occupation. All the sites contained

some amount of obsidian, but chert, a locally abundant material, is absent from all but five sites and makes up a small fraction of the total lithic assemblage Orlins 1971a:40-55).

In Orlins' study, a “surface site” is an indication of Native Californian activity that was visible on the surface and did not contain any obvious subsurface deposits such as midden. These sites ranged in size from a small cluster of obsidian flakes 1 m. (3.25 ft.) in diameter to diffuse artifact distributions 100 m. by 200 m. (325-500 ft.). Like the midden sites, the surface sites were distributed across the local plant communities, but not as evenly. Of the 56 sites, 6 were in the oak savanna on the valley floor, 37 in the chaparral hillsides, and 13 in the mixed blue oak and gray pine woodlands. All sites recorded contained obsidian chipping waste, flake tools, and/or formal tools. Four of the oak savanna sites contained handstone and millingslab milling equipment (Orlins 1971a:51). The blue oak and gray pine woodland sites were on the margins of the valley floor on the lower terraces and hillsides. Three sites contained groundstone tools that could be handstones either for lithic tool manufacture or milling purposes.

The majority of the surface sites were in the chaparral plant community in the canyon drainages and the terraces where drainages meet the valley. The density of the chaparral plant growth made the limits of many of these sites difficult to define, but they seem to still fall into roughly the same dimensional range as the other surface sites. One site, CA-LAK-370, is the largest site, 100 m. by 450 m. (325 ft. by 1475 ft.), and it contained a diffuse artifact scatter with discrete concentrations. Two chaparral sites contained chert artifacts and only a few contained milling equipment of any kind (Orlins

1971a:51-54). The greater number of sites, high proportion of projectile points, and paucity of milling equipment in the chaparral areas led Orlins (1971:54-55) to speculate that the chaparral sites reflect a high frequency of hunting. Additionally he suggests that the native population controlled the density of the plant growth through periodic burning practices.

The very little excavation that was done consisted of coring to determine the depth of the midden at CA-LAK-152 and a single 1x1 m. (3.25x3.25 ft.) square sunk at the ethnographic village of *Tlotli*, CA-LAK-153. The coring at CA-LAK-152 revealed that the midden was over a meter thick and obsidian flakes were found beneath it in sandy subsoil at 1.5 m. (5 ft.) depth (Orlins 1971a:48-49). This site was heavily disturbed by decades of relic hunters. The test excavation in the midden at *Tlotli* revealed that the site, previously damaged to an unknown extent by bulldozing, consisted of a midden 0.5 m. (1.5 ft.) in depth that contained three obsidian point bases, identified as Borax Lake widestem type. The main artifacts recovered were all surface finds in the bulldozer-disturbed midden and vicinity. These included a single complete Borax Lake Widestem type point, three complete obsidian Excelsior points, two complete obsidian Houx type point base fragments, and three obsidian base fragments that were identified as Mendocino concave base type, but exhibit possible fluting. A single clamshell disc bead dated to the American Period 1850-1881 was also found in the disturbed midden. All 17 of the housepits recorded by Mauldin had been destroyed by the time of the project (Orlins 1971a:49-50).

Sulphur Creek

In 1978 David Fredrickson et al. completed a project that is important to understanding the southern portion of the IV/WRRA along Sulphur Creek. This cultural resources survey for the proposed SUNDECO geothermal leasehold immediately adjacent and slightly overlapping the BLM property was focused on the historic-era resources of the Gibson farm, Anglo-American cemetery, and several mines. However, the artifacts found in the survey and ethnographic testimony given by Hill Patwin descendent Mabel McKay showed that this area was the site of *Yawi*, CA-COL-69, the principal village of the *Yawi-sel* tribelet. Within this area an extensive midden and the depression for an assembly house were located archaeologically, but ethnographically a native cremation and burial area, a dance area, a medicinal hot springs doctoring site, and the village boundaries were all established. Additionally, areas that were important for the gathering of particular ceremonial plants such as *Angelica tomentosa* were also located by McKay (Fredrickson et al. 1978:15-16, 18, 46-47, 56-57, Appendix B). Some of these ethnographically identified areas may be outside of the project boundaries of Fredrickson et al. and located within BLM property above Blank Spring (Fredrickson et al. 1978:Appendix B).

Long Valley

In 1980 Robert Jackson, at the time a graduate student at the University of California, Davis, nominated the village of Modern *Tebti* (CA-LAK-270) to the National Register of Historic Places. The site had previously been recorded by Kroeber (1924), Mauldin (1970), French and Stradford (1976), and Jackson, Orlins, French, and Offerman

(Jackson 1980:1-2). This village, located on a higher terrace about 150 m. (490 ft.) east of the older village of *Tebti*, was the location of the Cache Creek Rancheria during the historic-era. Survey undertaken by Jackson, Orlins, French, and Offerman located six clearly defined housepits and another six less distinct pits in addition to the dancehouse identified by Kroeber (1932:350; Jackson 1980:6). Kroeber (1932:350) identified the site as "Modern *Tebti*" and recorded an older section of the site closer to the confluence of the creeks, but this was not confirmed by Jackson (1980:6). A local resident, John Kennedy, confirmed that the site of Modern *Tebti* is the same as the Cache Creek Rancheria visited by Kroeber and Barrett. Kennedy also stated that his father told him that at the end of the 19th century there were over 100 native residents of *Tebti* (Jackson 1980:4)

The northern area of Long Valley around the *Lol-sel* principal village of *Ali-matinbe* (CA-LAK-421) was surveyed in 1993 for the California Department of Forestry and Fire Protection (then CDF, now CAL FIRE) by Mark Gary and Deborah McLear-Gary of Consulting Archaeologists in Calpella, California. During this survey they examined the sites originally recorded by Mauldin in the 1950s, including *Ali-matinbe*, CA-LAK-421, and reestablished that at this site there were dozens of house pits and at least three larger buildings identified as ceremonial (Gary and McLear-Gary 1993a). Profuse amounts of groundstone, including handstones and millingslabs, bowl mortars, pestles, and hopper mortar slabs, which had been unearthed during ranching activities, were present at a smaller village site (CA-LAK-296) approximately one mile southeast of CA-LAK-421 (Gary and McLear-Gary 1993b). These may have been compiled from multiple

sites, but the diversity of the milling equipment present again demonstrates the long and consistent habitation of the region.

California State Route 20 corridor

Roger Cook and Stephen Hammond, archaeologists for the California Department of Transportation (Caltrans), excavated three sites (CA-LAK-702, -703, and -704) along California State Route 20 where a truck passing lane was to be built (Cook and Hammond 1977:1-5). The site that had the most excavation was CA-LAK-702, with a total of thirteen 1x1 meter units. The findings mainly consisted of obsidian flakes, points, and flake tools; animal bone, mainly black-tailed deer, rabbits, and hares; and a probable hearth. The faunal and lithic assemblages recovered during excavation indicate that the site functioned as a hunting camp used principally for hunting and processing black-tailed deer, but also for a lesser amount of small game. Most of the black-tailed deer were pre-butchered at the site of the kill and secondarily butchered at this camp, while only a small number were brought back from to the site intact for butchering. Conversely, all the small game, mainly rabbits and hares, were killed elsewhere and transported intact to the site for butchering (Cook and Hammond 1977:41-50, 58).

CA-LAK-703 is about 100 m. (325 ft.) east of CA-LAK-702. Excavation in this area consisted of eight 1x1 m. (3.25x3.25 ft.) units north of the roadway, which contained no cultural resources, and three more south of the roadway. Unlike the neighboring site, its artifact assemblage was small. A few dozen obsidian flakes made up the bulk of what was recorded. A corner notched projectile point and a clamshell disc bead were the only

diagnostic artifacts and point to a late occupation (Cook and Hammond 1977:51-54, 58). The relatively small assemblage and lack of any midden points to CA-LAK-703 being a rarely used site, and was interpreted by Cook and Hammond (1977:54) as a possible hunting camp. I propose an alternative explanation based on the site's placement along the interregional route between Clear Lake and the Sacramento Valley, namely that it was a trailside stopping point, used infrequently.

CA-LAK-704 was not directly along the route of California State Route 20; instead it was a short distance up a side canyon and was in the area of impact from soil deposition from the road construction. This site had been previously damaged by the construction of Walker Ridge Road that crossed the site and had necessitated the removal of large boulders or outcroppings that may have contained mortars (Cook and Hammond 1977:ii, 55-58). Excavation was mainly performed here as a presence/absence test for cultural resources and consisted of three 1x1 m. (3.25x3.25 ft.) units. Having found the site, excavation was halted and soil was deposited elsewhere. The assemblage was almost entirely obsidian flakes, but the presence of mortars and the possibility of more mortars having been previously removed suggested to Cook and Hammond (1977:ii, 55-58) that this site was a seasonal acorn gathering and processing camp.

Excavation of CA-LAK-702 continued in 1978 by the Sonoma State University Anthropology Laboratory, now the Anthropological Studies Center, under David Fredrickson and Robert Jackson. Originally they expanded the previous excavation with seventeen 1x2 m. (3.25x6.5 ft.) units arranged in four clusters, and then expanded again,

adding five larger 2x4 m. (6.5x13 ft.) trenches to explore the relationships between units. Ranging in depth from 30 to 100 cm. (12 to 39 in.) below the surface, a considerable number of features were recorded, including four hearths, five possible hearths, and a large pit identified as an earth oven (Jackson and Fredrickson 1978:1-2, 82-84, 135-137). The artifact assemblage was similar to that recovered previously by Cook and Hammond (1977), consisting mainly of a large amount of faunal remains, mostly black-tailed deer, rabbits, and hares, and obsidian projectile points, chipping waste, and flake tools (Jackson and Fredrickson 1978:1-2, 135-137).

The earth oven was identified by comparing it to Barrett's (1952:61-62) description of such an oven used by neighboring Pomo groups (Jackson and Fredrickson 1978:84-85). In this the ovens are described as pits wherein a fire was built to heat the earth and then removed, and then filled with a series of layers of hot rocks, leaves, food, leaves, hot rocks, and so on, until the oven was completely filled, after which it was completely enclosed by a layer of earth. Jackson and Fredrickson (1978:84) stated that these ovens were not known ethnographically for the Hill Patwin, but Kroeber (1932:276) describes a very similar oven about a foot across without the stones and an additional fire built on top used by the River Patwin. This oven was used to bake acorn or buckeye bread and to reheat and steam strips of dried salmon. Since the Hill Patwin were also described as baking bread, it can be assumed that they used earth ovens as well. The Hill Patwin ovens would have needed to be larger than those of the River Patwin, as their bread was often 60 cm. (2 ft.) in length (Kroeber 1932:276, 278, 295-296).

One hundred twenty-five pieces of obsidian were recorded from CA-LAK-702 and sourced using X-ray fluorescence spectroscopy. Only one of these came from a source outside the area, Napa Glass Mountain, while the rest were sourced to the quarry at Borax Lake. Obsidian hydration dating performed on some of these pieces proved to be inconsistent (Jackson and Fredrickson 1978:135). Study of the 60 projectile points and fragments shows a regular set of point types with shift through time. The deepest levels contained barbed, deeply notched points that often were missing their bases, which seem to correspond to the Gunther Barbed type; replaced by shouldered wide-necked points, probably Clear Lake Corner Notched type; and finally corner notched Rattlesnake type points. There was some indication the projectile points had been manufactured from preforms on site (Jackson and Fredrickson 1978:56-60, 135, Fig. L18-L23b; Justice 2002:402-420).

In addition to the faunal remains and flaked obsidian, a small amount of groundstone and bone tools and beads were recorded. Only four positively identified groundstone artifacts were recovered, consisting of a hopper mortar slab with two mortar depressions, a hopper mortar slab with a single mortar depression, and two pestle fragments. One possible groundstone artifact was recovered—a rock slab with a flat, smooth surface that formed a slight angle with the ground. Jim Brown of the Elem Pomo was present on the site as the Native American observer for the project and reported that this item was very similar to a slab his grandfather used to make magnesite cylinder beads. The bone tool assemblage consisted of three deer bone awls and one broken awl tip. Also recovered were four clam shell and one steatite completed

beads and one steatite and one clam shell unfinished bead fragments (Jackson and Fredrickson 1978:82-83, 135-137).

Jackson and Fredrickson (1978:1, 134) agree with Cook and Hammond's (1977:41-50, 58) conclusions that this site was a seasonal camp, used primarily for obtaining and processing black-tailed deer meat. They also argue that the presence of mortars and pestles at the site means that it was not solely a hunting camp, and processing of other resources, probably acorns, also occurred here (Jackson and Fredrickson 1978:85, 135-137). The presence of the earth oven may mean that the occupants of this site were baking acorn bread to store rather than simply processing the acorns into flour.

Wilson Valley

South of the IV/WRRA, the valley formed by The North Fork of Cache Creek has been the subject of considerable archaeological study. Archaeologists from UC Berkeley under the direction of Clarence Smith surveyed the area in 1947 for the proposed Wilson Valley Reservoir, which was never built. During this project they recorded 14 significant sites (CA-LAK-1 to -14) that included the ethnographically documented villages of *Talok* (CA-LAK-1), *Opi* (CA-LAK-4), *Kiukui* (CA-LAK-7), and *Holokome* (CA-LAK-11) (Solari 1994:85, 131).

Several smaller projects took place in the area after this, including one by Gary and McLear (1987), but the next major survey was undertaken by Greenway (1988) between 1986 and 1987 for her Master's thesis at Sonoma State University (Solari 1994:85-86). Within this area Greenway identified 34 Native Californian sites, including some that

had been previously recorded. She divided these into 7 types: sites with housepits, midden, and ceremonial building depressions; sites with housepits and midden; sites with housepits and no midden; midden sites with milling equipment; lithic concentrations with milling equipment; lithic concentrations; and quarry sites (Greenway 1988:71-72). Greenway suggests that the first category represents primary village sites, and she recorded six examples, with two containing very large depressions over 22 m. (72 ft.) in diameter and another two with large depressions between 10 and 20 m. (32.5 to 65 ft.) in diameter (Greenway 1988:72-77, 97). All the sites containing habitation debris including housepits were located on terraces above the valley floor, while the majority of non-residential sites were on the highest terrace or hill and ridge tops (Greenway 1988:96).

Sites that contained	Housepits, midden, and ceremonial building depressions	Housepits and midden	Housepits and no midden	Midden sites with milling equipment	Lithic concentrations with milling equipment	Lithic concent-rations	Quarries
Number of sites	6	10	4	5	2	8	1

Figure 11: Number and types of sites recorded in Wilson Valley. (Greenway 1988:77-98)

Greenway dated the sites through a combination of temporally diagnostic artifacts, types of milling equipment, and obsidian hydration analysis. The resulting data were then compared to previous ethnographic and archaeological records. This showed that 12 of the sites dated to the historic period, 13 to the Upper Emergent, 1 to the Lower Emergent, 4 to both the Upper and Lower Emergent, 1 spanning the periods between the Middle Archaic and the Upper Emergent, and 5 to the Middle Archaic (Greenway

1988:132-134). Among other artifacts, she collected projectile points from Middle Archaic sites, including Borax Lake widestem type, Mendocino concave base type, Houx contracting stem type, and Excelsior type, and Emergent period sites, including Rattlesnake corner notched type, Clear Lake corner notched type, and Gunther barbed type. The vast majority of these were manufactured out of Borax Lake obsidian (Greenway 1988:136-137, 150-151, 153). Milling equipment found included millingslabs, bowl mortars, bedrock mortars, and hopper mortar slabs. Other artifacts included incised bone tubes, *Olivella* shell beads of several types, clam shell beads, magnesite beads, and *Haliotis* ornaments (Greenway 1988:142-148)

Burials were found at many of the habitation sites, and had been brought to the surface through rodent action and both incidental and intentional modern activities. At several sites, including *Kuikui* and *Holokome*, there was evidence for a shift in mortuary practice from burials to cremations between the Lower and Upper Emergent periods (Greenway 1988:153), which could signal a shift in populations or the adoption of Pomo burial practices by Hill Patwin groups.

Following the work that Marlene Greenway did for her thesis, in 1994 Elaine-Maryse Solari produced a Master's thesis at Sonoma State University in the form of a National Register of Historic Places nomination for the Cache Creek Archaeological District. This involved revisiting the sites previously surveyed by Greenway, surveying additional areas, and performing obsidian hydration testing on items from the sites to get an idea of the chronology of the area (Solari 1994:1, 9-14). In all, she established that

there were 35 known prehistoric sites that were considered to be contributing to the Cache Creek Archaeological District (Solari 1994:1).

The obsidian samples submitted for hydration analysis were all flakes, 94% of which were sourced by Tom Origer and Greg White to the Borax Lake quarry site (Solari 1994:12). These results, when combined with diagnostic projectile point data and shell bead styles, provide a tentative occupational chronology for the area and shows that sites were variously inhabited between approximately 9000 years B.P. and 1840 A.D. (Solari 1994:115, 123-124). During the earliest period, approximately 9000 to 8500 years B.P. there only appears to be incidental use of the area, probably by highly mobile, small populations (Solari 1994:115). After this, there is evidence of seasonal use and increasing site diversity until roughly 2500 years B.P. Near the end of this period, sites with housepits appear, at least three of which have continued occupation into the next period. Also during this time, the first evidence of the use of acorns as a dietary staple appears (Solari 1994:116-117).

Between 2500 and 2000 years B.P., there was an expansion of habitation sites, which were established on terraces and alluvial fans adjacent to the major creeks. This settlement pattern stabilizes subsequently, but several of these smaller sites developed into villages by 1000 years B.P. At two sites dating to this period, located at opposite ends of the district, large dancehouses were constructed (Solari 1994:118-119), indicating the importance of these villages. By the period leading up to the Historic-era, there were over twenty sites in use in the area, all but four of which had components dating to the

previous period, demonstrating a continuity of site use. Expansion of many of the habitation sites implies that there was a population increase. There are three sites that may represent ethnographically documented villages: *Opi* (CA-LAK-4), *Kuikui* (CA-LAK-7), and *Holokome* (CA-LAK-11). These are also the largest habitation sites in the district, and both CA-LAK-7 and CA-LAK-11 contain large dancehouse depressions (Solari 1994:120-122).

Solari concluded that the Cache Creek Archaeological District was eligible to the National Register due to the important data that could be gathered from the sites it contained and the possibility of using these data to refine the North Coast Ranges cultural chronological sequence. Additionally, its placement along the interregional trade route from the Central Valley into the Clear Lake basin may be able to provide information on regional relationships. The large sample of both habitation and subsistence sites may allow archaeologists to better understand the settlement and subsistence patterns in the region and how they changed over time. Finally, the large number of intact surface house pits, rare in California, could provide information on both the lifeways of the inhabitants and the architectural sequence (Solari 1994:124-132). In 1999, the BLM acquired the Bear Creek Ranch, expanding their Cache Creek property by 11,000 acres. These lands were designated in 2000 a Natural Area, part of a national network of reserved areas containing important ecological and scientific resources and are managed for minimal human disturbance. The status of the land changed again in 2006 when Cache Creek was designated by Congress the Cache Creek Wilderness, the strictest of designations. Moreover, the Wilderness designation protects the Cache Creek

Archaeological District by forbidding the use of any mechanized equipment within wilderness boundaries (Lloyd 2011b: pers. comm; US-BLM 2010a; 2010b).

More recently, a geoarchaeological study was conducted in the Wilson Valley area by Alexander DeGeorgey and published in the form of his MA thesis (DeGeorgey 2003:1-2). The intentions of this research were to create a generalized model for predicting Paleo-Indian site locations; to formulate a geochronology for the Cache Creek confluence and canyon areas around Wilson Valley; and to get a better understanding of the natural processes of site-formation (DeGeorgey 2003:98-99). He was able to establish a geochronology that consists of the formation of three creek-side terraces at about 12000 years B.P., 8000 years B.P., and 1500 years B.P. (DeGeorgey 2003:102-105).

While in much of the area the older terraces are so eroded that any cultural resources that they contained have been lost, there were still some locations where these prehistoric sites remained (DeGeorgey 2003:105-107;100). Five sites with Paleo-Indian components were identified in the highest terrace, T3, as well as Lower Archaic period finds. On the second highest terrace, T2, DeGeorgey found three periods of Archaic period occupation. Finally the lowest terrace contains evidence of habitation by Late Archaic populations (DeGeorgey 2003:99-103). Long periods of erosion created voids in the archaeological record between the established time periods (DeGeorgey 2003:106). Where these geologic formations were present, DeGeorgey found that this model was generally predictive of Paleoindian site location (2003:105-107).

ARCHAEOLOGICAL IMPLICATIONS

The completed studies and projects from the IV/WRRA have several commonalities. One is that there is a surprising dearth of chert and other materials within the tool manufacturing debitage, obsidian being almost exclusively used through all time periods. Another is the sharp division between lowland valley sites and upland hill and mountain sites. The upland sites appear to have been used much more ephemerally as hunting and gathering camps and have left little behind besides obsidian chipping waste, projectile points, flake tools, and the occasional hearth. The lowland areas, in contrast, encompass the vast majority of the habitation and milling sites. Both the large principal villages and the smaller satellite villages are located on valley floors. While that is not surprising, more unusual is that most of the milling sites, both bedrock mortar locales and sites with portable milling equipment, are located in lower elevations near the bottoms of the valleys. In all the surveys in the upland portions, only a single mortar fragment and a single millingslab were recorded. This pattern supports the argument for the long history of the settlement and resource acquisition patterns recorded ethnographically for the Hill Patwin, such using the upland areas primarily for hunting and the lowland areas for habitation (Kroeber 1932:255, 294-296).

A third theme that should be noted is the evidence for populations of considerable size occupying the area. Indian Valley was considered a backwater by Kroeber (1932:263) and ignored by Barrett (1908) and Merriam (1903). A Smithsonian archaeologist stated about Indian Valley that “none of these areas appears to have been

suitable for inhabitation or occupation by Indians in aboriginal times, for no archaeological remains of importance were found there." (Drucker and Smith 1948) In contrast, the 50 housepits present in Indian Valley and over 100 in Long Valley suggest large native populations. While all of these may not be contemporaneous, the limited evidence points to large, complex villages in the area.

V. REGIONAL TRIBELET DISTRIBUTION

PREVIOUS TRIBELET CLASSIFICATIONS

There has been considerable disagreement over the names, numbers, and distributions of the tribelets in the upper Cache Creek and upper Stony Creek drainages. Powers (1877) was the first to try to work out the locations of various tribelets among the Hill Patwin. He described that along the course of Cache Creek there were a series of three groups, the *Ol'po-sel*, the *Chen-po-sel*, and the *Wi-lak-sel*, meaning, respectively, "upper people", "lower people", and "people on the plains". In Long Valley he placed the *Lol-sel,* and on Stony Creek, the *No-yuki* (Powers 1877:218-219). A quarter century later, Merriam (1903:260, 262) spent time in the region and wrote that the residents of this area were speakers of the "interior group" of the "Southern division" of Wintun languages and were divided into multiple tribes. In his organization, the *Choo-hel-mem-sel* occupied the upper section of Stony and Little Stony Creeks and the northern portion of Bear Valley. South of them he placed the *Chen'po-sel*, whose territory encompasses the majority of the IV/WRRA, into Bear Valley, and down along the Cache Creek Corridor. Like Powers, Merriam placed the *Lol-sel* in the upper portion of Long Valley (Merriam 1903:260, 262).

Shortly after Merriam's work in the area, Barrett (1908:291-292) describes the people of Long Valley as *Lol-sel* and says that they called the people in the extreme lower end of Long Valley the *Kai-nap-o*, possibly similar to *Chen-po-sel* of Powers (1877). Barrett does not mention any other Patwin tribelets. When Kroeber (1932) surveyed the region,

he checked many of the villages described by Barrett and had many more described to him by local Patwin informants. Kroeber stated that there are 16 principal villages among the Hill Patwin, at least 5 of which are located near to what is now the IV/WRRA. These five tribelets were the *Lol-sel*, the *Tebti-sel*, the *Sukui-sel*, the *Chuhel-mem*, and a tribelet that he could not find a name for. The *Lol-sel* occupied most of Long Valley, with the *Tebti-sel* occupying the very southeast end of the valley where it meets with the valley around Cache Creek. Their territory was centered on the confluence of Long Valley Creek and The North Fork of Cache Creek and extended to near Indian Valley and south along the Cache Creek corridor. In the upper Stony Creek drainage Kroeber placed the *Chuhel-mem,* and in Bear Valley he stated that there was a tribelet known as the *Sukui-sel* with their principal village *Sukui* located in the valley. While Kroeber was told by informants that in Indian Valley the village of *Tlolti* had a dancehouse, and thus was a principal village, he was not able to ascertain a name for this tribelet (Kroeber 1932:263,424).

The final classification of the upper Cache Creek watershed tribelets occurred in the 1970s. Fredrickson, working on information given to him by ethnographic informant Mabel McKay, states that there was no tribelet called the *Sukui-sel*, and in fact there was no tribelet centered in Bear Valley. Instead he described a tribelet called the *Yawi-sel* who occupied the Sulphur Creek area and north into Bear Valley (Fredrickson et al 1978:20).

RECLASSIFICATION OF TRIBELETS

To untangle the sociopolitical landscape of the upper Cache Creek watershed during the late prehistoric and early historic-eras, it was necessary to comb through multiple ethnographies and combine that data with the local geography. Kroeber (1932:257-259) stated that Hill Patwin tribelets tended to encompass watersheds, with the areas between drainages being the boundaries, rather than the streams themselves. Each tribelet was focused on a principal village that contained a dancehouse (Kroeber 1932:259). These villages were often remembered ethnographically (Kroeber 1932:259) and dancehouses can be identified archaeologically (Greenway 1988:97-99). To reconstruct the local tribelet boundaries I first combined ethnographic statements identifying village dancehouses with the archaeological evidence of such buildings. This led to a determination of the local principal villages or tribelet centers. From there, the ethnographic description of which tribelets controlled which general area was added, and finally the generalized boundaries were drawn by comparing these descriptions with the local hydrology and identifying potential watersheds that could have formed the territories.

Lol-sel

The *Lol-sel* ("tobacco people") occupied Long Valley and had their main village at *Ali-matinbe* (CA-LAK-294) near its western end. Satellite villages of the *Lol-sel* included *Tsila´nkori* on the east side of the valley and *Beta* on the west side, about 4 miles above the confluence of Long Valley Creek and The North Fork of Cache Creek (Kroeber

1932:350). It appears that the territory stretches in a southeasterly direction to the ridge between the Long Valley and Clear Lake and northward to the headwaters of The North Fork of Cache Creek.

Tebti-sel

The area around the convergence of Long Valley Creek and The North Fork of Cache Creek was inhabited by a group that has alternately been referred to as the *Tebti-sel*, meaning "confluence people", or as the *Chen´po-sel*, meaning "middle people." Kroeber argues that *Tebti-sel* was the emic term derived from the name of their central village, *Tebti* (CA-LAK-270), while the term *Tsenpo-sel* was how their neighbors referred to them (1932:263). Powers used the latter term but spelled it *Chen´po-sel* and some version of this spelling has been followed by most if not all authors besides Kroeber (Fredrickson et al.1977:18-19; Orlins 1971:30; Powers 1877:219). *Chen'po-sel* was used by Merriam (1903:262-263, Map 5; Orlins 1971:28) to refer to the entire southern group of the Hill Patwin, but this was refuted by *Yawi-sel* consultant Mabel McKay (Fredrickson et al.1977:18-19). In my study, Kroeber's example will be followed and the term *Tebti-sel* will be standard.

Tebti-sel was one of the larger local tribelets and controlled a series of satellite villages along The North Fork of Cache Creek. Three villages were located southwest of the Long Valley/The North Fork of Cache Creek confluence: *Tokti*, located about 1 mile (1.6 km.) downstream, *Ho´lokomi*, a further 3 miles (5 km.), and *Helu´supet* about another 1 mile (1.6 km.) downstream. Two settlements, *Ts´ilda* and *Ts´asi´k*, were located up The

North Fork of Cache Creek towards Indian Valley, one-half mile (.8 km) and 2 miles (3.2 km.) respectively. One-quarter mile (.4 km.) up Long Valley Creek from *Tebti* was *Sotori* (Kroeber 1932:262-264, 350). The territory of the *Tebti-sel* extended to the eastern Clear Lake Pomo tribelets and the *Lol-sel* to the west, up Benmore Canyon to Walker Ridge and the edges of *Yawi-sel* to the east, and up The North Fork of Cache Creek canyon almost to the Indian Valley Dam.

Ol'pol-sel

The tribelet present in Indian Valley was not identified by Kroeber, but Powers mentions that the *Ol´po-sel* or "upper people" lived further up the drainage of The North Fork of Cache Creek from the *Tebti-sel* (*Chen'po-sel*), implying that they inhabited Indian Valley (Powers 1877:219). Ethnographic interviews done by Mauldin indicated that the area was known as *Pol-pol-slac*, similar to the term used by Powers (Orlins 1971:30-31). The principal village for this tribelet was *Tlotli* (CA-LAK-153), located at the southern end of Indian Valley. No satellite villages are known ethnographically for the *Ol´po-sel* (Kroeber 1932:262, 350). Much of the territory of this tribelet encompasses Indian Valley. The eastern border likely went along Walker Ridge and the northern border likely lay between the headwaters of Stanton Creek and Stony Creek. To the west the territory probably extended up The North Fork of Cache Creek and held the headwaters of Wolf Creek.

Yawi-sel

The tribelet in Bear Valley was called by Kroeber *Sukui-sel* ("bear people"), whose main village *Sukui* was located about halfway up the valley. Two satellite villages, *Oro-tlhabe*, located to the north 4 miles south of Leesville, and *Yawi-La*, located south at Sulphur Creek, were noted (Kroeber 1932:263, 350). Subsequent consultation by Fredrickson with Mabel McKay indicates that *Yawi*, Kroeber's *Yawi-tlha*, (CA-COL-69/H) was the principal village of the tribelet and that the tribelet should more accurately be termed *Yawi-sel* (Fredrickson et al. 1978:20). To the south the territory reached to Cache Creek while to the west it met with that of the *Tebti-sel* above Benmore Canyon and ran north along the east side of Walker Ridge. In the north, the territory met the southern boundary of the *Chuhel-mem-sel* near the top of Bear Valley and then ran south along the ridge east of Little Valley.

Chuhel-mem-sel

To the north of the study area, and perhaps encompassing portions of it, was the territory of the *Chuhel-mem-sel*. Their principal village was located on Indian Creek near the southern end of the modern East Park Reservoir (Kroeber 1932:263-264). Their territory encompassed the upper reaches of the Stony Creek drainage (Merriam 1903:262).

These tribelet territorial boundaries were not impermeable. Ethnographic accounts of poaching illustrate the illicit crossing of boundaries by residents of neighboring tribelets. Acceptable crossing of these borders also occurred, mainly along

the extensive trail network that existed between these villages and tribelets. The ties between these Upper Cache Creek tribelets was at least in part due to these trails. Together, the system of tribelet territories and the system of trails can provide sociopolitical context for sites found within the area.

VI. TRAIL NETWORK

INTRODUCTION

An elaborate system of trails ran through and connected various portions of the study area. These functioned at different scales and served different purposes. Internal tribelet trails connected the principal and satellite villages with each other and with temporary camps and resource areas, while a wider system of major trails connected the local tribelets together. The largest scale system connected the Sacramento Valley with Clear Lake and then on to the Pacific coast (Davis 1961:47, 72; Fredrickson et al. 1978:27; Kroeber 1932:273-274; Sample 1950:3, 24). Ethnographic data on trail routes comes from two sources: Mabel McKay as told to David Fredrickson (et al. 1978:26-27, Map 2, 3), and an unnamed Hill Patwin informant to Henry Mauldin (1971, cited in Orlins 1971:31). Mauldin's informant provided information on Trails 4, 10, and 11 while McKay provided information on Trails 2 through 8. An approximation of the trail alignments is depicted in Figure 12.

An important aspect of all scales of Hill Patwin trail networks is that each route consisted of a set of two individual trails, a "coming-in" trail and a "going-out" trail. Which trail was traveled depended on if travelers were entering or leaving a particular village. Thus villages at either ends of routes would have termed each trail differently. The purpose of the set of trails was so that travel along them would keep disturbance of any resources along the route to a minimum. Different songs were to be sung depending whether travel was on a "coming-in" trail or a "going-out" trail. Various proscriptions

and taboos were to be followed while traveling, including a taboo on eating and drinking (Fredrickson et al. 1978:26-27).

These trail networks served multiple purposes. The interregional trail routes may have been primarily for exchange of goods, but there were other uses. Members of Upper Cache Creek Patwin tribelets would go on hunting trips to the Sacramento Valley; during the winter for migratory birds Barrett 1908:288) and to hunt elk (Kroeber 1932:262, 351). Similarly, people from these tribelets would travel to Clear Lake to take advantage of the large fish runs in winter and early spring (White, Wohlgemuth, et al. 2002:507-510; White and Meyer 2002:526). Hot springs in the area around Yawi were known for their healing powers and local tribal healers used them for cures. People from all directions were said to have visited the area to access this healing (Fredrickson et al. 1978:34). These travels would have brought them into contact with the local inhabitants and that contact formed the basis of cultural exchange between the regions.

Intertribelet trail routes would have formed the network for localized exchange of more local materials as well as those brought into the area from the interregional trade routes. Additionally, community events such as dances brought people from satellite villages into the principal villages, and possibly from other tribelets as well. These routes allowed for intermarriage between groups and for people to access particular sites of importance, such as the healing springs at Yawi (Fredrickson et al. 1978:34). In some instances these trails were used for travel to resources including the Borax Lake obsidian source.

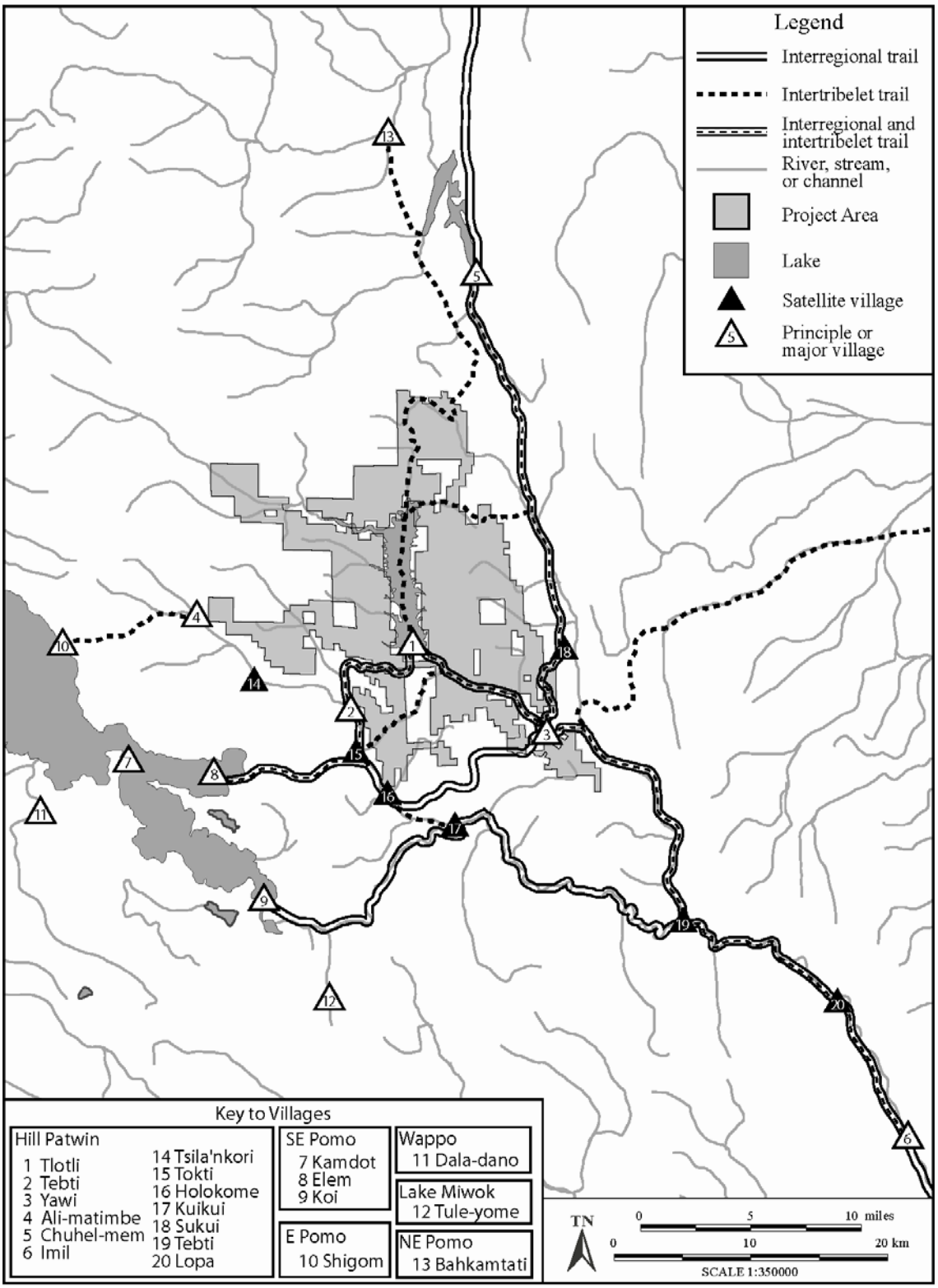

Figure 12. Village and trail map. Approximate routes of interregional and intertribelet trails with major village locations. (Adapted from Barrett:1908:334; Fredrickson et al. 1978:Map 2; Kniffen 1939:355; Kroeber 1932:424; Merriam 1903:260; Sample 1950:Plate 1)

INTERREGIONAL TRAIL ROUTES

Trail 1: *Koi* Clear Lake to Sacramento Valley Trail

This is the first of the two ethnographically known major interregional trails. Beginning in the Southeastern Pomo tribelet of *Koi* on the southern shore of Clear Lake, it connected the region to the Sacramento Valley. This route runs south of the study area along Cache Creek through the southern edges of *Tebti-sel* territory and down through the Capay Valley towards the River Patwin, probably in the vicinity of the *Yodoi* tribelet north of Woodland (Davis 1961:47, 72; Sample 1950:3, 24).

Trail 2: *Elem* Clear Lake to Sacramento Valley Trail

The specific course of this route, the second of the ethnographic interregional trails, is debated. According to Sample (1950:3, 24) and Davis (1961:47, 72), this route begins at the Southeastern Pomo tribelet of *Elem* on the eastern shore of Clear Lake and runs east to the North Fork of Cache Creek and appears to pass through *Tebti* before either turning north through Bear Valley or turning south back towards Cache Creek in Capay Valley. McKay and Fredrickson (Fredrickson et al. 1978:26-27, Map 2, 3) placed Trail 2 roughly along the route of modern California State Route 20, veering north through *Yawi* before turning either north through Sulphur Creek and Bear Valley or south to join Trail 1 through Cache Creek and Capay Valley. It is possible that the *Elem* trail encompassed both of these potential routes, as is they differ only in the initial portions.

INTERTRIBELET TRAIL ROUTES

Trail 3: *Yawi* to *Tlotli* Trail

This trail connected the principal villages of the *Yawi*-sel and the *Ol´po-sel*. From *Yawi* it led northwest up the Sulphur Creek drainage, crossed Walker Ridge near Benmore Canyon and turned northeast to the edge of Cold Spring Canyon and down into the south end of Indian Valley to *Tlotli* (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 4: *Tlotli* to *Tebti* Trail

The principal villages of the *Tebti-sel* and the *Ol'po*-sel were connected by this trail, running from *Tlotli* in the south end of Indian valley down the North Fork of Cache Creek Canyon to *Tebti* (Orlins 1971:31). This also connected the *Tebti-sel* to the *Yawi-sel* by meeting the *Yawi* to *Tlotli* Trail in Indian Valley (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 5: *Yawi* to *Tokti* Trail

Yawi was additionally linked to *Tebti-sel* villages by a trail that ran northwest up the Sulphur Creek drainage, crossed Walker Ridge and ran southwest down Bowmore Canyon through *Ho´lokomi* and to *Tokti* (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 6: *Yawi* to *Chuhel-mem* Trail

This trail connected the *Yawi-sel* to the *Chuhel-mem* near Lodoga in the Stony Creek watershed to the north. It ran north from *Yawi* across the hills and then along the hills at the edge of Bear Valley due to the increased water retention before the natural rock restriction was dynamited (National Cooperative Soil Survey 2006:121). The trail then probably passed through *Sukui* before continuing to *Chuhel-mem* (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 7: *Yawi* to *Koru* Trail

Connecting the *Yawi-sel* to the River Patwin and the Sacramento Valley was a route that ended at *Koru*. From *Yawi* this trail ran northeast along Sulphur Creek to Bear Creek, then north to Hamilton Creek and north through Widow Flats to Salt Creek. This led into the Sacramento Valley, arriving near the River Patwin villages of *Koru* and *Tatno* in the vicinity of modern Colusa (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 8: *Yawi* to *Imil* Trail

This trail ran northeast along Sulphur Creek before turning south down Bear Creek. It followed this to Cache Creek and down into the Capay Valley through *Lopa* to *Imil*, a major village (possibly a principal village) in the territory of the *Ko-pa* tribelet (Fredrickson et al. 1978:26-27, Map 2, 3).

Trail 9: *Tlotli* to *Tokti* Trail

This route connected the *Ol'po-sel* to satellite villages of the *Tebti-sel* led from *Tlotli* southwest through Benmore Canyon to *Tokti* on The North Fork of Cache Creek (Orlins 1971:31). This may also have connected *Tlotli* to the interregional trail from *Elem* to the Sacramento Valley.

Trail 10: *Tlotli* to *Chuhel-mem* and *Bahkamtati* Trail

This is the first of two trails that linked Indian Valley to Bear Valley. It ran north through Indian Valley from *Tlotli*, then up Stanton Creek and over the ridge to Mill Creek. It then ran east on Mill Creek into the northwest end of Bear Valley. From here it continued north past Cook Springs where it connected the *Ol´po-sel* with the *Chuhel-mem* and the Northeastern Pomo at *Bahkamtati* near Stonyford (Orlins 1971:31).

Trail 11: *Tlotli* to Bear Valley Trail

This is the second trail that connected Indian and Bear valleys. Its route is unclear as the description does not use locations that currently show on maps. However, assuming that "the Brim place" that is referred to by Maudlin (1971 cited in Orlins 1971:31) is near to Brim Road, then this trail runs north from *Tlotli* along Indian Valley before turning east at the north end of the valley and crossing Walker Ridge on the same route as the modern Bartlett Springs Road before dropping into Bear Valley along the

route of Brim Road. From that point it may have turned south towards the *Yawi-sel* village of *Sukui* or turned north to *Chuhel-mem* territory.

Trail 12: *Ali-matinbe* to *Shigom* Trail

This trail is not discussed ethnographically but can be inferred from the accounts that discuss the close ties and frequent travel between the *Lol-sel* of Long Valley and the *Shigom* Pomo of northeastern Clear Lake (Barrett 1908:291-292; Gifford 1923:79; Kniffen 1939:361; Sample 1950:3). This route probably led from *Ali-matinbe* up Long Valley to Fuller Canyon and then over the ridge down to *Shigom*.

Trail 13: *Tebti* to *Elem* Trail

This route is not discussed ethnographically but can be inferred from description of the relationships between the *Tebti-sel* and the *Elem* Pomo as well from description of Hill Patwin harvesting fish from Clear Lake (Gifford 1923:79-80; Johnson 1978:352; Kniffen 1939:361; Sample 1950:3). Presumably this trail took a similar path between *Tebti* and *Elem* to the route taken by the interregional Trail 2. From *Tebti* it traveled down The North Fork of Cache Creek to Hog Hollow Creek and then west along the modern route of California State Route 20.

SUMMARY

The trail network connecting the different tribelets together would not have simply connected them for exchange. It would have also formed a social network that tied these

groups into a form of larger community, whether such a community was recognized or not. This community had easier access to the Clear Lake Pomo tribelets and may have fostered closer affiliation to those groups. The presence of the interregional trail system passing through the Upper Cache Creek area allowed the Hill Patwin to take part in an extensive trade network and placed them in the center of potential cultural exchange between the Clear Lake Basin and the Sacramento Valley.

VII. REGIONAL IMPLICATIONS OF THE UPPER CACHE CREEK PATWIN

INTRODUCTION

The research for this thesis has prompted questions about the anthropological treatments of the Hill Patwin and the boundaries for the North Coast Ranges culture region. In the southern reaches of the North Coast Ranges, the eastern edge is often drawn following the eastern extent of ethnographic Pomoan habitation. The Pomo groups form the primary ethnographic resource that is used to contextualize the archaeological record of the region, especially for the Emergent period. The Hill Patwin warrant a greater inclusion in the discussion of this culture region and greatly contribute to our understanding of the region by illustrating the flow of cultural influences across regional boundaries.

CULTURE AREAS, REGIONS, AND BOUNDARIES

The concept of the culture area has deep roots in the study of North American prehistory. By the 1890s the idea had already developed in North American ethnography, advocated by Franz Boas (Buckley 1988:15). His student Alfred Kroeber further developed this concept arguing that the significance of cultural phenomena should be understood within a context of space and time (Buckley 1988:15). Building on work by Otis T. Mason and Clark Wissler, Kroeber (1939a:1, 4) defined a culture area as a descriptive category that represents a region where the inhabitants are more similar to

each other in their ecological, economic, social, and ideological systems than they are to the inhabitants of other regions. This concept came out of a desire to incorporate environmental factors more into American anthropology, while not entirely depending on these factors to explain cultural development (Kroeber 1939a:1, 3). This taxonomic system has become one of the predominant ways that the cultures of the North American continent are divided and classified (Fredrickson 1973:73-74, 96-97; Willey and Phillips 1958:21). In this system most of California was designated the Central California culture area, with other parts of the state being in the Great Basin, Southwestern, and Northwest Coast culture areas (Kroeber 1939:53-54; Moratto 1984:3).

Willey and Phillips (1958:19) defined smaller categories, including the culture region, a division of a culture area confined to a smaller space that could be occupied by a social unit larger than the community. In culture areas beyond California these could be associated with "tribes" or "societies", but in the Central California culture area, societies developed on a smaller scale, and are usually referred to as tribelets. California subregions included many tribelets and often many languages (Fredrickson 1994a:33-34) (Figure 13). Culture regions are units that have a greater coherence and lend themselves more easily to use in archaeological interpretation. Two of the regions of the Central California culture area are the North Coast Ranges region and the Central Valley region. The North Coastal or North Coast Ranges region was codified by Fredrickson (1973:97-98; 1984:471; 1994: 34) as the northwestern portion of the state north of the San Francisco Bay and west of the Central Valley. Although Fredrickson (1973:146-148,150-152) included the Patwin into this region in his doctoral dissertation, this has been seldom

followed, even in his own later work (1984). A recent example of the trend of excluding the Hill Patwin from this cultural region is witnessed in the recent work *California Indians and their Environment* by Lightfoot and Parrish (2009:303), which includes a discussion of the Patwin in the Central Valley and Sierra Foothills region.

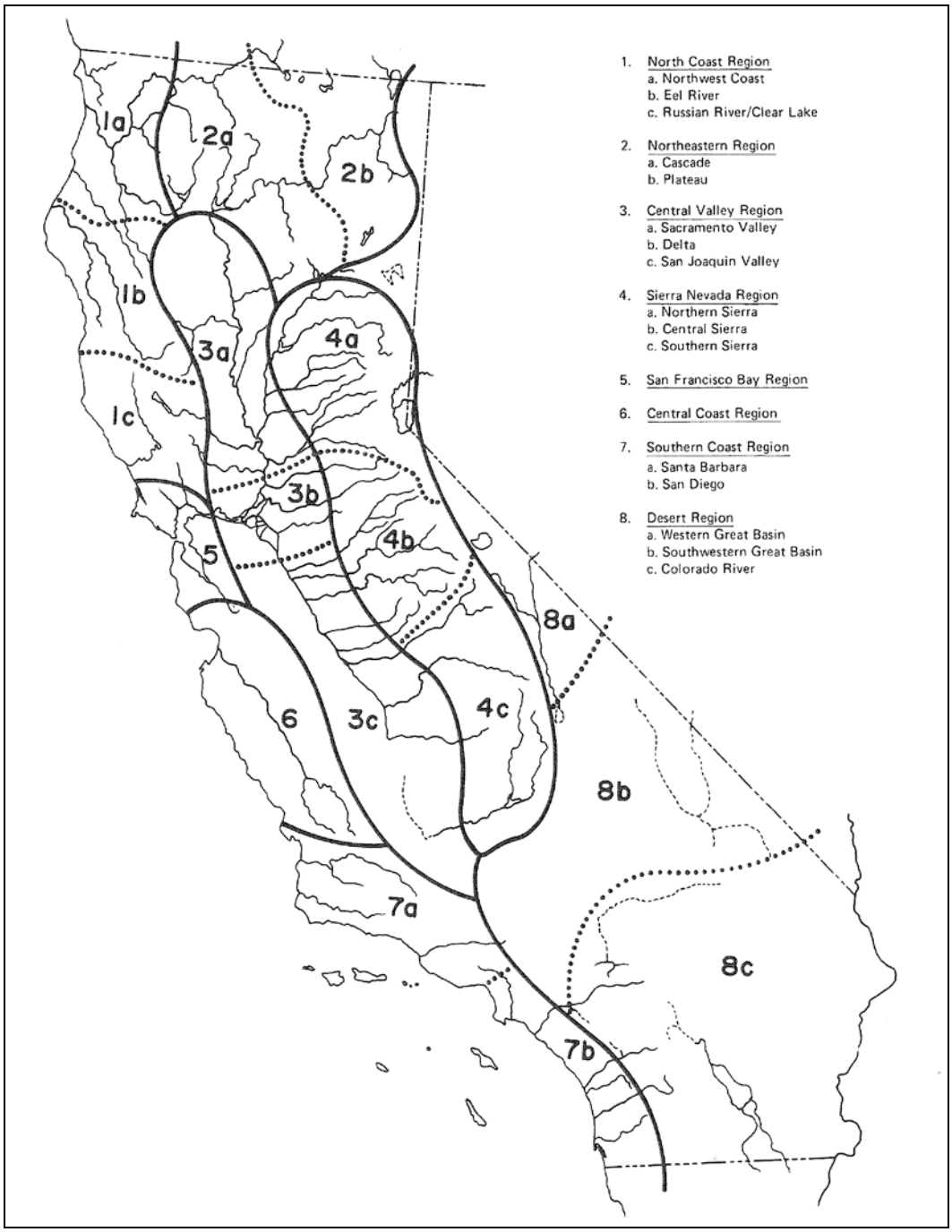

Figure 13. Culture Regions of California (Moratto 1984)

REGIONAL TREATMENT OF THE HILL PATWIN

In the course of this research I have identified two primary reasons that the Hill Patwin are usually discussed in regards to the Central Valley cultural region rather than the North Coast Ranges region. The first is a difficulty in separating linguistic grouping from cultural identification, specifically in this case because the Hill Patwin shared a common language with the River Patwin in the Sacramento Valley, although they spoke different dialects. The second reason comes from two problems with the ethnographic record. Groups were often combined in the same rancherias due to US government actions, which led confusion about group identity on the part of ethnographers. Additionally, in many of the early ethnographies the researchers and authors made little effort to differentiate between the cultural practices of the inhabitants of the hills and the valley. Each of these reasons is important to examine in more detail.

The term "Patwin" is a designation based on linguistic similarity rather than any acknowledged cultural affiliation. Such designations are of limited use for the examination of local anthropological and archaeological issues such as intergroup exchange systems, boundaries, and cultural transmission, but can be useful when dealing with large geographic areas or in investigating potential prehistoric migrations (Rehor 2008:12). Culture, identity, and language are elements that vary independently of each other (Terrell 2001:6-7). It is precisely this limitation that affects the assignation of the Hill Patwin to the Central Valley culture region. There is no reason to assume that closely linguistically-related groups lived their lives in precisely the same ways using

the same practices. Migration, immigration, and colonization are all events that can culturally separate languages. Contemporary examples that can illustrate that language does not equal culture and identity include French-speakers in France and Belgium, the Arabic-speaking Ma'dan and Bedouin of the Middle East, Dutch-speakers in the Netherlands and Suriname, and Hmong-speakers in Vietnam and California. Very different processes produced each of these splits between culture and language. A dramatic example of different cultures practiced by speakers of closely related languages is that of the pastoral Khoihoi and hunting and gathering San in southwestern Africa. There is more direct evidence that the Patwin-speakers of the hills and those of the valley did not see themselves as unified in any particular way. Ethnographies show that the River Patwin were more familiar with the cultures, societies, and tribelets of the Maidu and the Nisenan in the Sacramento Valley than they were with their linguistic kin in the hills. Together, these groups viewed themselves as having substantial uniformity with each other and some degree of group identity that excluded the people in the hills (Kroeber 19329:256).

The second reason that the Hill Patwin do not usually factor into overviews of this region is more difficult to deal with. Many of the ethnographies only consulted informants in River Patwin rancherias or gloss over any differences and conflated the two ethnolinguistic groups (McKern 1922:236; 1923:159; Kroeber 1932:253-254). This is partially due to the damage done to Native Californian society at the turn of the 20th century when these ethnographies were being recorded. Disease, cultural disruption, and loss of territory caused most of the rancherias in the hills to be significantly reduced

in population or empty of inhabitants by the time Barrett, Merriam, and Kroeber visited (Kroeber1932:254-255). Even with these limitations, careful inspection of and comparison between ethnographies, historical documents, and archaeological records does make it possible to differentiate between the inhabitants of the hills and of the valley.

INTERREGIONAL MOVEMENT AND CULTURAL EXCHANGE

The edges of culture regions are usually drawn on maps in the same fashion as national borders, but really share very little with those sorts of hard boundaries. Kroeber (1939:5) identified this as the weakest part of the culture area concept. Peoples living across the boundaries are likely to share many of the same traits, often because the movement of groups was not prescribed to a particular area and as they moved about and interacted with their neighbors, cultural exchanges were likely to occur. The ethnographic resources inform us that there was often travel to a variety of resources that were not solely controlled and utilized by particular tribelets (Davis 1961:1; Kroeber 1932:262, 351; Gifford 1923:78-82). Even resources which did belong to certain groups were often exploited by other groups, either surreptitiously or with permission. This seems to be especially true in the Clear Lake basin. The vast majority of the lithics found in the upper Cache Creek watershed are manufactured from Borax Lake obsidian. This is ethnographically supported as the upper Cache Creek tribelets had the right to use the source without specific permission from the *Elem* or *Koi* Pomo who lived adjacent to it.

Another Clear Lake example is the fish and the fish runs that occurred several times each year. These resources were an important part of the Hill Patwin lifeway, a continuation of the long tradition of groups from outside Clear Lake basin coming for the fish runs. This can be seen dating back to the Middle Archaic in the contemporaneous use of the lake shore by both Berkeley Pattern and Mendocino Pattern peoples (Hildebrandt 2007:92-93; White 2002b:550).

It is probable that the issue of accessibility was an important determinant of the close relations between the upper Cache Creek Patwin tribelets and the Clear Lake Pomo tribelets (Figure 12). The ethnographically-identified routes traveled between the upper Cache Creek watershed and Clear Lake were shorter and easier than the ones that provided access to the Sacramento Valley floor to the east (Davis 1961:47, 72; Fredrickson et al. 1978:26-27, Map 2, 3; Sample 1950:3, 24). The topography favored movement towards Clear Lake as well. In this area the ridge lines tend to be steep and oriented in a north-south direction, obstructing travel rather than facilitating it as in other areas. The canyon carved by Cache Creek is very rugged and would have made travel along this corridor more difficult than other routes.

For the tribelets of Long and Indian Valleys and the North Fork of Cache Creek, the *Lol-sel*, the *Tebti-sel*, and the *Ol'pol-sel*, these trails provided quick and easy access to the villages of the Eastern Clear Lake Pomo groups of the *Koi*, *Elem*, and *Shigom*. These trails traverse relatively easy terrain with much less change in elevation than trails to the Sacramento Valley. An often traversed trail connected the *Lol-sel* principal village of

Ali'matinbe with the principal village of *Shigom* and another connected the *Ol'po-sel* principal village of *Tlotli* and the *Tebti-sel* principal village of *Tebti* with the principal villages of *Elem* and *Koi* (Fredrickson et al. 1978:26-27, Map 2, 3; Orlins 1971:31) (Figure 12). The *Yawi-sel* of the Sulphur Creek area had a more challenging route to travel, but still found access to Clear Lake and particular resources nearby it of great importance. Some of the differential ease of access to Clear Lake that the *Lol-sel*, the *Tebti-sel*, and the *Ol'pol-sel* had compared with that of the *Yawi-sel* may be seen in cultural patterns such as burial practices. The three tribelets closest to Clear Lake all practiced cremation like the Eastern Clear Lake Pomo groups, while the *Yawi-sel* buried their deceased in a fashion much like the River Patwin (Kroeber 1932:290-291).

The inter-regional trails connecting the Central Valley to Clear Lake cross the territories of the upper Cache Creek Patwin tribelets (Davis 1961:47, 72; Fredrickson et al. 1978:26-27, Map 2, 3; Sample 1950:3, 24) (Figure 12). Again these trails are easier to travel between Clear Lake and the upper Cache Creek area than from upper Cache Creek to the Sacramento Valley. Additionally, these trails guaranteed that a flow of cultural exchange occurred between the North Coast Ranges region and the Central Valley and Delta regions. These particular Hill Patwin tribelets were in the center of this exchange. There was bidirectional movement of influences through this area.

The relations between the bordering groups of Pomo and Hill Patwin seem to have been particularly close and amiable. Gifford (1923:78-82) wrote that the *Lol-sel*, and to a lesser extent the other tribelets of the Cache Creek area, had the right to fish in Clear

Lake, with or without permission depending on the groups involved. Additionally they had the right to come to Borax Lake to obtain obsidian, but needed permission to gather seeds or acorns. In the same fashion, the Pomo groups needed permission to gather seeds and acorns in Long Valley. The relations between the *Lol-sel* and the *Shigom* Pomo were particularly close and intermarriage between them was practiced on a regular basis. An often traversed trail connected the *Lol-sel* principal village of *Ali'matinbe* with the principal village of *Shigom* (Gifford 1923:77-92; Kniffen 1939:359-360). Similarly the *Tebti-sel* could gather obsidian but needed permission to fish in Clear Lake. They also intermarried frequently with the Pomo groups. This close relationship contrasts with those of the River Patwin, which were more strained and included several feuds over access to resources such as water fowl and tule elk (Kroeber 1932:262, 351; Gifford 1923:79).

LINK BETWEEN THE CENTRAL VALLEY AND CLEAR LAKE BASIN

The arrival of the Patwin ethnolinguistic group in the Sacramento Valley, Suisun Bay, and adjacent upland areas of the eastern North Coast Ranges is often tied to the appearance of the Augustine Pattern in this region of California. The picture is painted of bands of newcomers armed with the hereto unseen bow and arrow entering the area and pushing out the previous inhabitants (Golla 2007:77-78). Not only did they bring archery technology but may have brought many of the cultural traits that make up the Augustine Pattern. The full set of Augustine material culture has yet to be found in

either the Clear Lake basin or the upper Cache Creek area (Hildebrandt 2007:94-95). Instead, an abridged version is present, known as the Clear Lake Aspect (Fredrickson 1984:496).

The identities of people producing artifacts have an effect on the artifacts themselves. The links between identity and choice can be reflected in the patterns of material culture. The production of an artifact is informed by society and culture, which include a communal understanding of how things are made. In this way, shifts in the style and form of artifacts can illustrate social boundaries (Stark 1998:5-9). This can be a distinct shift along the boundaries of groups or it may be present in the variation of the forms of everyday artifacts (Stark:1998:xvii). The artifacts found in the upper Cache Creek area and the ones that were ethnographically described as being used by the Hill Patwin show closer ties to the Southeastern Pomo and the Clear Lake Aspect of the Augustine than to the full Augustine pattern in the Sacramento Valley and Delta. This predominance of western styles of artifacts again links the Hill Patwin to the Clear Lake Pomo. This can be seen in a variety of examples, including the methods of food preparation and in the styles of projectile points.

The methods of gathering, storing, and preparing food are examples of the bidirectional exchange between the upper Cache Creek watershed and the Clear Lake basin. Particularly the influence of the Clear Lake Aspect on the Hill Patwin can be seen in their use of milling technology. The Hill Patwin did not use the wooden log mortars preferred by the River Patwin (Kroeber 1932:296). Instead they used flat stone slab-and-basket hopper mortars like those of the Southeastern Pomo, a typical artifact type of the

Clear Lake Aspect (Fredrickson 1984:498, Kroeber 1932:296). The basketry produced by the Hill Patwin shared more in common with Clear Lake Pomo basketry, in both design and choice of material, than it did with the baskets produced by the River Patwin (Kroeber 1932:362). This is supported by a more recent study that examined utilitarian baskets (these were chosen because they were rarely traded) and demonstrated that the similarities in style, form, and decoration in the baskets of the "Western" Hill Patwin, the Southeastern Pomo, and Lake Miwok were greater than of any of these groups to the baskets of the "Eastern" Hill Patwin or the River Patwin (Pryor and Carr 1995:285-287). A unique type of acorn and seed granary that is believed to have originated among the Hill Patwin was adopted by the Southeastern Pomo groups (Barrett 1952:22). Other features, such as the earth oven recorded along Cache Creek by Jackson and Fredrickson (1978:84-85), show additional ties to the Pomo.

The same western-leaning focus of the upper Cache Creek Patwin tribelets can be seen in their choice of projectile point styles. One of the important point styles in the North Coast Ranges region is the Rattlesnake series point, which is indicative of the Augustine pattern and is found north of the San Francisco Bay to roughly the Mendocino border (Fredrickson 1984:496-498; Hildebrandt 2007:94). This point series includes the Clear Lake corner-notched points and the Rattlesnake corner-notched points. It is tied ethnographically with the Pomo peoples (Meighan 1955:15, 31), and several arrows collected by the Russians at Fort Ross and now in the Museum of Anthropology and Ethnography in St. Petersburg are finished with this style of point (Blackburn and Hudson 1990:Fig. 9 cited in Justice 2002:407). The Gunther barbed series

point, associated with the Gunther Pattern further to the north, is a tool type found throughout the North Coast Ranges from Mendocino northward as well as in the Sacramento Valley in the River Patwin area (Fredrickson 1984:496; Hildebrandt 2007:93; Justice 2002:416-417). The Delta side-notched point is also usually found in the Central Valley in the River Patwin area (Justice 2002:393-395). In the upper Cache Creek drainage both the Gunther and the Rattlesnake series are represented, but it does not appear that the Delta side-notched is present. Most of the Emergent period points in the area are Rattlesnake types with a fewer number of Gunther points found mainly in the Cache Creek corridor and on the eastern side of the mountains (Jackson and Fredrickson 1978:56-60; Greenway 1988:150-151). While the use of a particular point type does not automatically equate with a particular culture, its presence or absence can give us an idea of the mixing of cultures in this region. In this case it illustrates again the cultural ties between the Hill Patwin and the Pomo, rather than with the River Patwin.

SUMMARY

Cultural identity is not synonymous with artifacts, language, or shared heritage; instead it is based on ideology, a difficult thing to examine archaeologically (Fredrickson 1994:93; Hodder and Hutson 2003:2). Artifacts do not equate with culture, as much as many archaeologists wish they would (Fredrickson 1994a:93). However, that is not to say that these factors do not co-occur with each other (Fredrickson 1984:508). In fact, material culture and cultural identity have complex interplay between them as cultural factors impact the forms of material culture and the use of the material culture by people

impacts the form of the cultural practices. This can be reflected in the cultural identity and the ideology of the people and groups that took part in the material culture. The relationship between behavior and material culture is dependent on the particular culture-historical context that it occurs in (Hodder and Hutson 2003:7-14). By using ethnography, historical documentation, archaeology, and linguistics as tools to examine cultural identity, a better understanding can be gained about how people in the recent past constructed such concepts. It is through such a process that the orientations of the Hill Patwin tribelets, especially in the upper Cache Creek watershed, can be investigated.

It is tempting in the present to assume that groups in the past who spoke closely related languages shared almost identical cultures. This is often not the case and may lead us to make incorrect inferences about the past. Language, culture, behavior, race, and identity are characteristics vary independently (Terrell 2001:6-7). Grouping the Hill Patwin with the River Patwin in the Central Valley cultural region is a mistake of conflating these factors. In California, the tribelet was the primary sociopolitical group and language was not the defining characteristic of these units and it was not an indicator of culture or group identity (Golla 2011:2-3). Studying the inhabitants of the boundaries between culture regions can be an asset to the discipline, these spaces can be zones of increased social interaction and exchange. Social boundaries are the product of actions that maintain, cross, or blur these boundaries themselves (Stark 1998:9). The sociocultural concepts of how items are made have an effect on the material culture. In this way, shifts in the production, style, and form of artifacts can be indicative of

boundaries between (Stark 1998:5-9). The study of such spaces can give insights into the social organization of the surrounding areas and the ways that cultural traits are transmitted (Lightfoot and Martinez 1995:471, 488). Certain cultural processes may be unique to such marginal areas and that may influence the development of the surrounding cultures as well. Population movements, territorial expansion, and cultural exchange are some of the processes that may be most observable archaeologically in these peripheries (Fredrickson 1973:81). This makes the upper Cache Creek watershed and the eastern slopes of the North Coast Ranges ideal places to undertake such studies. By bringing the Hill Patwin into the North Coast Ranges cultural region and looking at their culture not as simply the materially-poorer version of the River Patwin, but instead viewing them as the locus for the movement and transmission of cultural practices and elements between these two regions, we will have a better basis for analysis. Ultimately, through doing this not only can we gain a better understanding of the Hill Patwin, but also their Pomo and River Patwin neighbors as well.

VIII. MANAGEMENT RECOMMENDATIONS AND CONCLUSIONS

OVERVIEW OF GUIDING PRINCIPALS, POLICIES, AND LEGAL FRAMEWORK

As discussed in the Introduction, the primary impetus behind the creation of this thesis is not any particular undertaking or potential impact; it is instead prompted by on-going management concerns within the IV/WRRA. Particularly, it serves the BLM's objectives to manage and protect cultural resources in an informed manner and to contribute to educating the public regarding the resources present on public land under the supervision of the Ukiah Field Office (US-BLM 2006:9-11).

According to Section 8100.02 of the BLM manual on managing cultural resources, it is the BLM's aim to use an integrated management system to identify, evaluate, decide appropriate uses for, and administer cultural resources on public land and other lands where BLM decisions may affect them (US-BLM 2004: 8100.02). The objectives of this are to:

A. Respond in a "legally sufficient and professional manner" to both the legal authorities on historic preservation and cultural resource protection and the principals of multiple use.

B. Recognize the potential scientific and public use of and the values attached to cultural resources and manage them appropriately.

C. To effectively manage multiple-use of cultural resources and public lands guided by the thousands of years of land use of inherent in cultural resources

D. Protect and preserve, in situ, representative examples of the "full array of cultural resources" that exist on public lands for present and future scientific and public use.

E. Protect federal and non-federal cultural resources from inadvertent damage from land use.

F. Advance the objectives of "the Department's and the BLM's Strategic Plan and the Government Performance and Results Act" (US-BLM 2004: 8100.02).

Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended (§16 U.S.C. 470), is concerned with the preservation of cultural resources in regards to the management of properties on land owned or controlled by federal agencies. These agencies are directed to be responsible for the historic properties under their jurisdiction. Section 110 states that each Federal agency must ensure that:

> historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register… [and] that such properties under the jurisdiction or control of the agency… are managed and maintained in a way that considers the preservation of their… values in compliance with Section 106 [NHPA Section 110(a)(2)(A) and (B)].

The historic preservation programs of these federal agencies must have procedures for identifying and evaluating cultural resources for eligibility on the National Register of Historic Places (NRHP) and for consulting with State Historic Preservation Officers, Native American groups, local governments, and the public at large. It is through this process of identifying and evaluating cultural resources that the BLM can focus on those that are eligible to the NRHP.

The nature of this project means that Section 106 of the NHPA does not apply in this situation. That having been said, future undertakings may fall under its rubric and require carrying out the Section 106 process. Federal agencies are required under this section to consider the impact of any undertakings on historic properties that are included in or eligible for listing on the NRHP (36 CFR Part 800).

The BLM's authority over cultural resources derives from a series of laws. The broadest framework for managing cultural resources on public lands is the Federal Land Policy and Management Act of 1976. This law directs the BLM to manage the multiple use of public lands in a manner that will "protect the quality of… historical… resources, and archeological values" (US-BLM 2004:8100.03.H). Under this law cultural resources do not need to be determined eligible for the NRHP to receive consideration. Additionally the Act provides for periodic inventorying of the cultural resources on public land as well as the enforcement of public land laws and regulations (US-BLM 2004:8100.03.H).

RECOMMENDATIONS

The BLM is responsible under Section 110 of the NHPA to manage and maintain its properties in a manner that takes into consideration the preservation and protection of any cultural resources under its jurisdiction. In order to fulfill these obligations, gathering additional information on the cultural resources present in the IV/WRRA is crucial and any impacts that may be affecting them need to be identified.

A more comprehensive cultural resources survey is required in the study area. Currently, only about 10 percent of the entire IV/WRRA has been subjected to intensive surface survey. The areas that have been surveyed need to be reexamined, not only to look for other cultural resources, but to establish their condition and identify any impacts to them. The total area of the IV/WRRA that has been surveyed should be increased. This would best be accomplished by identifying areas that: a) are more likely to contain cultural resources; b) may contain a wider variety of sites than the lithic concentrations previously recorded; and c) are more likely to be impacted by land use practices. These land use practices may include: personal activities such as off highway vehicle riding, hunting, and camping; commercial uses such as right-of-way permits and leases for energy development, mineral extraction, and grazing, and illegal activities including marijuana cultivation and trespass issues where a private landowner uses public land without authorization.

An area of the IV/WRRA that fits these criteria is the southeastern section of the property north of CA Route 20 and south of Sulphur Creek. This area is close to the ethnographic village of *Yawi*, contains a variety of terrains and plant communities, and is easily accessible to the public including those using the Wilbur Hot Springs directly to the north. An intensive surface survey of this area may yield the greatest amount of scientific data and also provide the best information for management.

The current site records and datasets do not indicate the presence of any NRHP eligible sites within the study area. However, the lack of comprehensive survey and

modern recording techniques means that this does not preclude the possibility of such sites existing within the study area. One type of resource potentially present in the IV/WRRA that could be successfully nominated to the NRHP is ethnographically identified gathering areas for particular sacred plants. These resources may be eligible as Traditional Cultural Properties under Criterion A. Traditional cultural significance of a property is based on the function it has in the historically rooted beliefs, customs, and practices of a community. Under this criterion, a property can be considered to have traditional cultural significance if it is associated with a series of events that a community finds significant to their cultural traditions (National Park Service 2002:13). Consultation between the BLM and the various tribes of Hill Patwin descent is essential to identify potential properties and to determine the tribes' interest in any nominations and general concerns about property.

ADDITIONAL RESEARCH

An important avenue for further research in the IV/WRRA concerns the ethnographic trail system. These routes were ethnographically attested to have consisted of two trails, one heading out from a village and the other coming in to it. The corridors through which some of these trails pass have been identified. Survey of these can potentially lead to identification of multiple site types. These sites and the materials that they contain may potentially be different on the trails that leave villages as opposed to the ones arriving. Identification of sites can provide valuable information on the nature

of the movements of prehistoric people in the region and the management of the land along these corridors.

Consideration of the upper Cache Creek watershed as a locus for cultural exchange between the Clear Lake basin and the Central Valley, and between the Pomo peoples and the River Patwin, can lead to opportunities for more research. Many aspects of material culture can be examined to look at the similarities and differences between these different groups and the ways that these characteristics may have been passed through this region.

CONCLUSIONS

The Indian Valley/Walker Ridge Recreation Area offers an excellent opportunity to examine the changes in the indigenous uses of upland areas over a very long time period. An extensive temporal range of occupation has been demonstrated both within and adjacent to the study area, from at least 8000 years B.P. into the ethnographic period. Previously, all the sites identified in the upland areas of the IV/WRRA have been recorded as lithic concentrations, but other sites containing bedrock milling equipment, plant processing tools, human remains, petroglyph or pictograph features, or habitation refuse such as hearths, beads, or bone tools may exist. Lithic concentrations can represent seasonal gathering, hunting, quarrying, or trading camps. A wider range of sites including plant processing, ceremonial, or more long-term residential locations, may be be present in the study area. Determining the presence or absence of particular

site types within the study area will provide important information about the ways that the indigenous inhabitants used the upland areas and how this use changed over time.

Although no ethnographic village sites, and perhaps no village sites exist within the study area, there are several located very close to it, in some cases only a matter of feet outside the boundary. From these villages at least four tribelets held territories that covered portions of the study area. Consequently, the area is an ideal location to perform a boundary study in order to investigate intertribelet territorial negotiation (Rehor 2008:56-57). These boundaries can be zones of increased social interaction and trade that can give insights into the social organization of the surrounding area (Lightfoot and Martinez 1995:471, 488). The rich ethnographic record of indigenous trails provides another aspect to this avenue of research. As the study area is between the traditional areas of the Pomo and the River Patwin it is an excellent locale to examine interplay and relationships between these language populations as well. The study area also may hold information on the entry of the Hill Patwin into the region and on the lifeways and cultural ties of the previous inhabitants. Research on the cultural resources of this area therefore has the potential not only to provide information about its indigenous inhabitants, but also about their neighbors to the east and the west.

REFERENCES CITED

Andrushko, Valerie A, Kate Latham, Diane Grady, Allen Pastron, and Phillip Walker
2005 Bioarchaeological Evidence for Trophy-Taking in Prehistoric Central California. *American Journal of Physical Anthropology* 127:375–384

Barrett, Samuel
1908 The Ethno-geography of Pomo and Neighboring Indians. *University of California Publications in American Archaeology and Ethnology* 6(1):1-332. Berkeley, California.

Bean, Lowell J. and Sylvia B. Vane
1978) Cults and Their Transformations. In *California*, edited by Robert F. Heizer, pp. 350-360. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.,

Beardsley, Richard K.
1954 Temporal and Areal Relationships in Central California Archaeology. *University of California Archaeology Survey Reports* 24 and 25. Berkeley, California.

Bennyhoff, James A. and David A. Fredrickson
1994 A Proposed Integrative Taxonomic System for Central California Archaeology. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes. Contributions of the University of California Archaeological Research Facility 52:15-24. Berkeley, California.

Buckley, Thomas
1988 Kroeber's Theory of Culture Areas and the Ethnology of Northwestern California *Anthropological Quarterly.* 61(4):15-26, Culture Theory and Cultural Criticism in Boasian Anthropology.

California Department of Fish and Game (DFG)
2010 Heritage and Wild Trout Program: More about…California native trout. Available online at http://www.dfg.ca.gov/fish/Resources/WildTrout/WT_NativeTrout.asp (accessed 28 September 2010).

California Department of Forestry and Fire Protection (CAL FIRE)
2008 Walker Fire Incident Information. Available online at http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=286 (accessed 15 February 2011).

Cook, Roger A. and Stephen R. Hammond
1977 Draft Report: Archaeological Test Excavations at CA-Lak-702, 703, and 704 on Ol-Lak-20-P.M.42.3/44.5. Office of Environmental Planning, California Department of Transportation, Sacramento, California.

David A. Fredrickson Archaeological Collections Facility [DAFACF]
2010 Accessions Number 76-12, records and materials. On file at Anthropological Studies Center, Sonoma State University [SSU], Rohnert Park, California.

Davis, James T.
1961 Trade Routes and Economic Exchange among the Indians of California. *University of California Archaeological Survey* 54: 1-71. Berkeley, California.

DeGeorgey, Alexander L.
2003 *A Geoarchaeological Approach for Identifying Paleo-Indian and Lower Archaic Sites in the Cache Creek Natural Area, Lake County, California*. Master's thesis in Anthropology, Anthropology Department, California State University, Chico. On file, Northwest Information Center, California Historical Resources Information System, Sonoma State University [NWIC, SSU], Rohnert Park, California.

Enderlin, Dean
2002 Geology of the McLaughlin Deposit. Available online at http://nrs.ucdavis.edu/mcl/natural/geology /region/region1.htm (accessed 8 February 2011)

Erlandson, Jon M., Torben C. Rick, Terry L. Jones, and Judith F. Porgasi
2007 One If by Land, Two If by Sea: Who Were the First Californians? In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Fitzgerald, Richard T., and Terry L. Jones
1999 The Milling Stone Horizon Revisited: New Perspectives from Northern and Central California. *Journal of California and Great Basin Anthropology* 21(1). Retrieved from: http://www.escholarship.org/uc/item/5h9684sg (accessed 10 September 2010).

Fredrickson, David A.
1973 *Early Cultures of the North Coast Ranges, California*. Doctoral dissertation, Department of Anthropology, University of California. Davis.

1974 Cultural Diversity in Early Central California: A View from the North Coast Ranges. *The Journal of California Anthropology* 1(1). Retrieved from: http://escholarship.org/uc/item/8vg876v9 (accessed 16 June 2010).

1984 The North Coastal Region. In *California Archaeology*, by Michael J. Moratto, pp. 471-527. Academic Press, Orlando, Florida.

1994 Archaeological Taxonomy in Central California Reconsidered. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes. Contributions of the University of California Archaeological Research Facility 52:15-24. Berkeley, California.

1994a Spatial and Cultural Units in Central California Archaeology. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes. Contributions of the University of California Archaeological Research Facility 52:15-24. Berkeley, California.

Fredrickson, David A., Victoria D. Kaplan, Janis K Offermann, and Scott M. Patterson

1978 *A Cultural Resources Survey of the Proposed SUNEDCO County Line Prospect Geothermal Leasehold, Colusa County, California.* Anthropology and Ethnographic Laboratories, Sonoma State College, Rohnert Park, California. On file, NWIC, SSU, Rohnert Park, California.

French, Nancy

1977 *The Indian Valley Activity Area, Lake and Colusa Counties, California: An Archaeological Survey.* Bureau of Land Management, Ukiah District, California. On file, NWIC, SSU, Rohnert Park, California.

French, Nancy and Hal Keesling

1975a *Archaeological Assessment of the Indian Valley Recreational Sites, Lake and Colusa Counties, California*. BLM, Ukiah District, California. On file, NWIC, SSU, Rohnert Park, California.

1975b Archaeological Site Record for CA-COL-34, Buck Flat Site. On file, NWIC, SSU, Rohnert Park, California.

1975c Archaeological Site Record for CA-LAK-455, Blue Oak Site. On file, NWIC, SSU, Rohnert Park, California.

1975d Archaeological Site Record for CA-LAK-456, Wintun Camp Site. On file, NWIC, SSU, Rohnert Park, California.

1975e Archaeological Site Record for CA-LAK-457, Barrel Springs Site. On file, NWIC, SSU, Rohnert Park, California.

1975f Archaeological Site Record for CA-LAK-465, Cypress Flat Site. On file, NWIC, SSU, Rohnert Park, California.

1975g Archaeological Site Record for CA-LAK-470, Boy Scout Site. On file, NWIC, SSU, Rohnert Park, California.

Hodder, Ian and Scott Hutson
2003 *Reading the past: Current Approaches to Interpretation in Archaeology*. Cambridge University Press.

Gankin, Roman
1971 Appendix C: A Brief Botanical Report on Indian Valley, Lake County. In *An Archaeological Survey of the Indian Valley Reservoir, Lake County, California*, by Robert Orlins. Foundation for Archaeological Research, Davis, California. Prepared for the National Park Service, Western Service Center. On file, NWIC, SSU, Rohnert Park, California.

Gifford, Edward W.
1923 Pomo Lands on Clear Lake. *University of California Publications in American Archaeology and Ethnology* 20: 75-92. Berkeley, California.

Golla, Victor
2007 Linguistic Prehistory. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. AltaMira Press, Lanham, Maryland.

2011 *California Indian Languages*. University of California Press, Berkeley, CA.

Greenway, Marlene L.
1988 *Surface Archaeology of the Cache Creek Drainage, Lake County, California*. Master's thesis in Cultural Resource Management, Anthropology Department, Sonoma State University, Rohnert Park, California.

Hickman, James (editor)
1993 *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, California.

Hildebrandt, William R.
2007 Northwest California: Ancient Lifeways among Forested Mountains, Flowing Rivers, and Rocky Ocean Shores. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Hildebrandt, William R., and John F. Hayes
1993 Settlement Pattern Change in the Mountains of Northwest California: A View from Pilot Ridge. *In There Grows a Green Tree: Papers in Honor of David Fredrickson*, edited by Greg White, Pat Mikkelsen, William R. Hildebrandt, and Mark E. Basgall, pp. 95-106. Center for Archaeological Research at Davis Publication No. 11, University of California, Davis.

Hughes, Richard E.
1994 Editor's Introduction. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes. Contributions of the University of California Archaeological Research Facility 52:1-5. Berkeley, California.

Jackson, Robert J.
1978 An Archaeological Investigation at CA-COL-54. Anthropology Laboratory at Sonoma State University, Rohnert Park, California. Prepared for California Department of Transportation, District 3, Marysville, California.

1980 National Register of Historic Places Inventory – Nomination Form for CA-LAK-270, Tebti. [Final copy never filed with OHP]. On file, NWIC, SSU, Rohnert Park, California.

Jackson, Robert J. and David A. Fredrickson
1978 *Archaeological Investigations at CA-LAK-702*. Anthropology Laboratory, SSU, California. On file, NWIC, SSU, Rohnert Park, California.

Jennings, C.W. and Strand, R.G.
1960 Geologic map of California: Ukiah sheet. California Division of Mines and Geology. Available online at http://ngmdb.usgs.gov/Prodesc/proddesc_336.htm (accessed on 7 February 2011).

Johnson, Eric R.
1984 Isolate Record, Lake County. On file, BLM, Ukiah Field Office, California.

Johnson, Patti
1989 Patwin. In *California*, edited by Robert F. Heizer, pp. 350-360. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Jones, Terry L. and Kathryn A. Klar (editors)
2007 *California Prehistory*. Altamira Press, Lanham, Maryland.

Jones, Terry L. and Kathryn A. Klar
2007 Colonization, Culture, and Complexity. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

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

Kniffen, Fred B.
1939 Pomo Geography. *University of California Publications in American Archaeology and Ethnology* 36(6):353-400. Berkeley, California.

Kroeber, Alfred L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, D.C. Reprinted 1976 by Dover, New York.

1929 The Valley Nisenan. *University of California Publications in American Archaeology and Ethnology* 24(4):253-290. Berkeley

1932 The Patwin and their Neighbors. *University of California Publications in American Archaeology and Ethnology* 29(4):253-423. Berkeley, California.

1939 *Cultural and Natural Areas of Native North America.* University of California Press, Berkeley, California.

Küchler, A.W.
1977 The Map of the Natural Vegetation of California. University of Kansas, Lawrence.

Larson, Elizabeth Lake County News
2008a Walker Fire jumps fire lines, reaches 10,000 acres. *Lake County News*, 24 June 2008. Available online at http://lakeconews.com/content/view/4679/764/ (accessed 15 February 2011).

2008a Firefighters, bulldozers slow Walker Fire's growth. *Lake County News*, 26 June 2008. Available online at http://lakeconews.com/content/view/4703/764/ (accessed 15 February 2011).

Lightfoot, Kent G. and Antoinette Martinez
1995 Frontiers and Boundaries in an Archaeological Perspective. *Annual Review of Anthropology* 24:471-492.

Lightfoot, Kent G. and Otis Parrish
2009 *California Indians and Their Environment*. California Natural History Guide Series, No 96, general editors Phyllis M. Faber and Bruce M. Pavlik. University of California Press, Berkeley, California.

Lloyd, Christopher
2010 BLM Archaeologist, Ukiah Field Office. Email communication to ASC Archaeological Assistant Evan Elliott 7 September 2010. On file, ASC-SSU, Rohnert Park, California.

2011a BLM Archaeologist, Ukiah Field Office. Email communication to ASC Archaeological Assistant Evan Elliott 8 November 2011. On file, ASC-SSU, Rohnert Park, California.

2011b BLM Archaeologist, Ukiah Field Office. Email communication to ASC Archaeological Assistant Evan Elliott 29 November 2011. On file, ASC-SSU, Rohnert Park, California.

Mangan, Gregg
1982 Isolate Record, Colusa County. On file, BLM, Ukiah Field Office, California.

McKern, W. C.
1922 Functional Families of the Patwin. *University of California Publications in American Archaeology and Ethnology* 13:235-258. Berkeley, California.

1923 Patwin Houses. *University of California Publications in American Archaeology and Ethnology* 20:157-171. Berkeley, California.

Merriam, C. Hart
1903 Ethnographic Notes on California Indian Tribes. In *University of California Archaeological Survey No. 68, Part III*, Ethnological Notes on Central California Indian Tribes, Wintoon, pp. 257-281, compiled and edited by Robert F. Heizer, 1967, Berkeley, California.

Milliken, Randall, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S, . Wiberg, Andre Gottsfield, Donna Gillette, Viviana Bellifmine, Eric Strother, Robert Cartier, and David A. Fredrickson

2007 Punctuated Culture Change in the San Francisco Bay Area. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Moratto, Michael J.

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

Munz, Philip A., and David D. Keck

1959 *A California Flora*. University of California Press, Berkeley, California.

National Agriculture Imagery Program (NAIP)

2009 Aerial Orthography for Lake County Ca, 1 meter resolution. Available online at http://www.atlas.ca.gov/casil/imageryBaseMapsLandCover/imagery/naip/naip_2009/2009_NAIP_sid_county_compressions/Lake/ (accessed 15 February 2011).

National Cooperative Soil Survey

2006 Soil Survey of Colusa County, California. Available online at http://soildatamart.nrcs.usda.gov/Manuscripts/CA011/0/colusaCA.pdf

National Park Service (NPS)

2002 *National Register Bulletin No. 15, How to Apply the National Register Criteria For Evaluation.* U.S. Government Printing Office, Washington, D.C. Available online at http://www.nps.gov/nr/publications/bulletins/nrb15/

Orlins, Robert I.

1971a *An Archaeological Survey of the Indian Valley Reservoir, Lake County, California.* Foundation for Archaeological Research, Davis, California. Prepared for the National Park Service, Western Service Center. On file, NWIC, SSU, Rohnert Park, California.

1971b Archaeological Site Record for CA-LAK-144. On file, NWIC, SSU, Rohnert Park, California.

1971c Archaeological Site Record for CA-LAK-152. On file, NWIC, SSU, Rohnert Park, California.

1971d Archaeological Site Record for CA-LAK-153, Tlotli Village Site. On file, NWIC, SSU, Rohnert Park, California.

Orlins, Robert I. and Chester King
1971 Archaeological Site Record for CA-LAK-149. On file, NWIC, SSU, Rohnert Park, California.

Palmer, Lyman
1881 History of Napa and Lake Counties, California. Slocum, Bowen & Co, San Francisco.

Powers, Stephen
1877 Chapter XXIV: The Patwin. *Tribes of California*. Contributions to North American Ethnology, Volume III. Department of the Interior U.S. Geographical and Geological Survey of the Rocky Mountain Region. Available online at http://books.google.com/books?id=j6YqAAAAMAAJ&pg=PP1#v=onepage&q&f=false (accessed 15 July 2010).

Preston, William
1997 Serpent in the Garden: Environmental Change in Colonial California. California History 76(2/3) Contested Eden: California before the Gold Rush, pp. 260-298.

Pryor, John and Christopher Carr
1995 Basketry of Northern California Indians. In *Style, Society, and Person: Archaeological and Ethnological Perspectives*, edited by Christopher Carr and Jill Neitzel. Springer-Verlag New York

Ragir, Sonia
11972 *Early Horizon in Central California Prehistory*. Contributions of the University of California Archaeological Research Facility Volume 15: The Early Horizon in Central California Prehistory Pages: 1-159

Rehor, Jay
2008 *Between a Rock and a Hard Place: Prehistoric Archaeology and Management of a Unique Upland Serpentine Environment Lake and Napa Counties, California.* Master's thesis in Cultural Resource Management, Anthropology Department, Sonoma State University, Rohnert Park, California.

Rondeau, Michael F., Jim Cassidy, and Terry L. Jones
2007 Colonization Technologies: Fluted Projectile Points and the San Clemente Island Woodworking/Microblade Complex. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Rosenthal, Jeffery, Jack Meyer, and Gregory White
1995 *Archaeological Investigations at the Crazy Creek Site, Ca-LAK-1682 and CA-LAK-1683, Lake County , CA.* On file, NWIC, SSU, Rohnert Park, California.

Rosenthal, Jeffery S., Gregory G. White, and Mark Q. Sutton
2007 The Central Valley: A View from the Catbird's Seat. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Sample, Laetitia L.
1950 Trade and Trails in Aboriginal California. *University of California Archaeological Survey* 8:1-30. Berkeley, California.

Schoenherr, Allan A.
1992 *A Natural History of California*. University of California Press, Berkeley, California.

Shepherd, Alice
2006 *Proto-Wintun*. University of California Press, Berkeley, California.

Society for California Archaeology [SCA]
2010 A Glossary of Proper Names in California Prehistory. Available online at http://www.scahome.org/about_ca_archaeology/glossary.html (accessed 15 September 2010).

Solari, Elaine-Maryse
1994 *A nomination to the National Register of Historic Places: the Cache Creek Archaeological District, Lake County, California*. Master's thesis in Cultural Resource Management, Anthropology Department, Sonoma State University, Rohnert Park, California.

True, D. L., Martin A. Baumhoff, and J.E. Hellen
1979 Milling Stone Cultures in Northern California: Berryessa I. *Journal of California and Great Basin Anthropology* 1(1). Available online at http://escholarship.org/uc/item/3m906886 (accessed 9 September 2010).

University of California Davis Natural Reserve System (UCD)
2007 McLaughlin Natural Reserve: Geology. Available online at http://nrs.ucdavis.edu/mcl/natural/geology/ (accessed 8 February 2011)

United States Bureau of Land Management (US-BLM)

2004 Section 8100 – The Foundations for Managing Cultural Resources. In *BLM Manual*. Official government document prepared by the United States Department of the Interior, Bureau of Land Management Available online at http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/blm_manual.html

2006 *Ukiah Resource Management Plan*. Official government document prepared by the United States Department of the Interior, Bureau of Land Management, Ukiah Field Office, Ukiah, California.

2008 Indian Valley/Walker Ridge Recreation Area. Ukiah Field Office. Available online at http://www.blm.gov/ca/st/en/fo/ukiah/indianvalley.html (accessed 28 September 2010).

2010a Cache Creek Natural Area. Ukiah Field Office. Available online at http://www.blm.gov/ca/st/en/fo/ukiah/cachecreek.html (accessed 27 October 2010).

2010b Cache Creek Wilderness. Ukiah Field Office. Available online at http://www.blm.gov/ca/pa/wilderness/wa/areas/cache_creek.html (accessed 27 October 2010).

West, G. James

2002 Pollen Analysis of Two Late Pleistocene-Holocene Cores from Clear Lake. In *Cultural Dirversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project*, edited by Greg White. Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

West, G. James, Wallace Woolfenden, James A. Wanket, and R. Scott Anderson

2007 Late Pleistocene and Holocene Environments. In *California Prehistory*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland.

Willits, Nikki Ann

2010 *Temporal Patterns of Skeletal Trauma Among Native Americans in Prehistoric Central California*. Master's thesis in Anthropology, Anthropology Department, California State University, Chico.

White, Greg

2002a Paleoenvironment. In *Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project*, edited by Greg White. Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

2002b Regional Implications. In *Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project*, edited by Greg White. Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

White, Greg, David A. Fredrickson, Lori D. Hager, Jack Meyer, Jeffery S. Rosenthal, Michael R.Waters, G. James West, and Eric Wohlgemuth
2002 *Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project.* Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

White, Greg, Eric Wohlgemuth, Jack Meyer, Krislyn Taite, and Antoinette Martinez
2002 Subsistance . In *Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project*, edited by Greg White. Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

White, Greg and Jack Meyer
2002 Synthesis. In *Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project*, edited by Greg White. Center for Archaeological Research at Davis Publication no. 13, University of California, Davis.

Willey, Gordon R. and Philip Phillips
1958 *Method and Theory in American Archaeology*. Chicago: University of Chicago Press, Chicago.