The Environmental and Cultural History of the North Fork Eel River Watershed and Yolla Bolly Country

Chapter 3

Prehistory

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Preface

This is the third chapter in a series of papers for what is anticipated to be an update of my book published in 1995; *Environmental History and Cultural Ecology of the North Fork of the Eel River Basin, California***.** Since then, I have published numerous articles, presented professional papers, and compiled, organized, and catalogued for future researchers, the existing historical archival data on the North Fork Eel River watershed and the surrounding Yolla Bolly country of southwestern Trinity, northern Mendocino, and southeastern Humboldt Counties. Most of these papers and publications can be found on my website; *solararch.org*. The Trinity County Historical Society in Weaverville also has copies of these papers and publications, as well as all the original homestead records, historical maps, historic and contemporary interviews with local residents, and other historical documents referred to in this study. The collection is available to researchers and is filed at the Historical Society under the heading; Trinity County Compendium (TCC).

Each "Chapter" in this series of papers focuses on a single topic and includes a bibliography. To date, the first two chapters have been completed and are available on my web site.

Chapter 1*: Origins: A Thumbnail History of the Geology and Soils of the Yolla Bolly Country,* presents a brief overview of the geologic "Origins" of the Yolla Bolly country and North Fork Eel River watershed.

pdf at: https://solararch.org/wp-content/uploads/2022/06/Chapter-1-Geology-and-Soils-NFER-final.pdf

Chapter 2: *Climate History* provides an overview of the climatic history of northwestern California focused on the Yolla Bolly country.

pdf at: https://solararch.org/wp-content/uploads/2022/11/Chapter-2-Climate.pdf

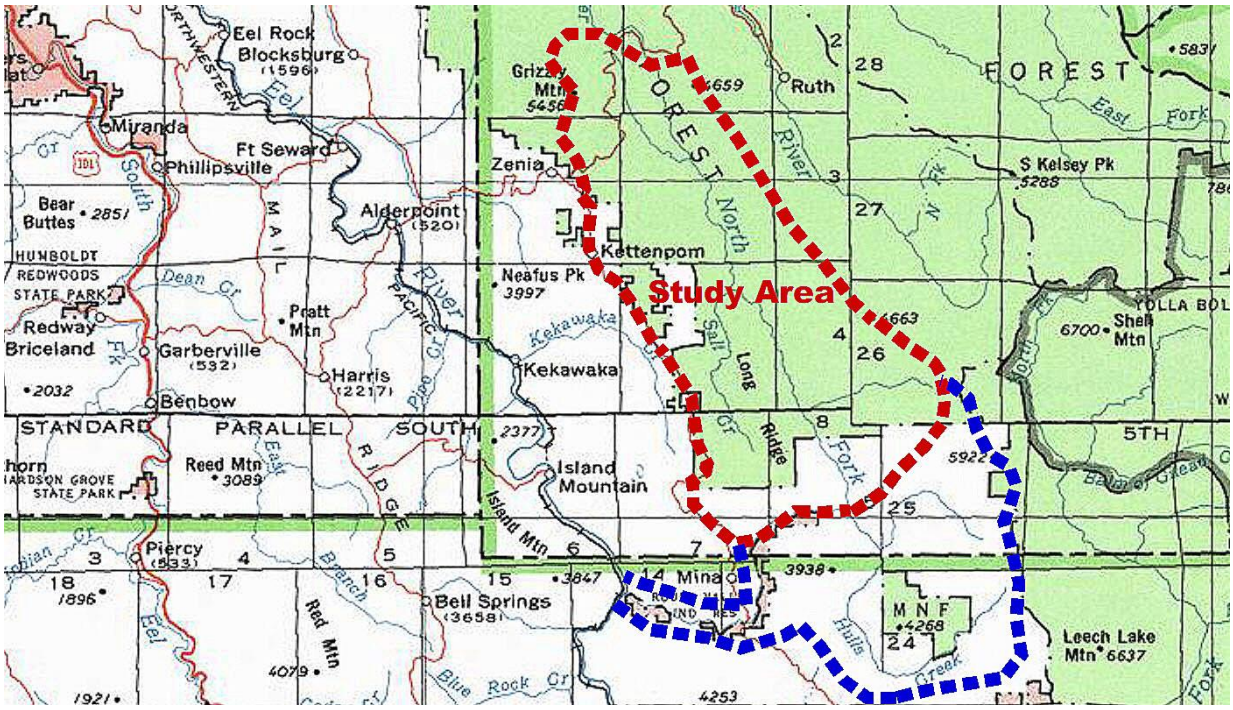
The goal of this chapter is to provide a brief overview for the non-archeologist of the prehistory of northwestern California focusing on the North Fork Eel River watershed and the surrounding Yolla Bolly country. I have avoided where possible technical jargon and have tried to include footnotes defining unfamiliar terms. Future chapters will include synopses of the region's ethnography, history, historical land-use activities, and environmental history.

Introduction

[In order to provide location and contextual information the Introduction section below repeats for each Chapter.]

The North Fork Eel River watershed is located in the center of what is referred to as "Yolla Bolly country" by local residents, and in the histories of this still remote region. The term Yolla Bolly comes from the Nomlaki Wintun language and roughly translates as "high snowy mountains." The Yolla Bolly country stretches north from Round Valley into southeastern Humboldt and southwestern Trinity Counties. It is a vast region of deep-cut canyons and steep almost-never-level terrain. It includes the highest mountains in the Coastal Ranges of California, the Yolla Bolly Mountains, with several peaks over 7,000' in elevation. The majority of the land in the Yolla Bolly country is federally owned and is managed by the Six Rivers, Mendocino and Shasta Trinity National Forests (Green shading on Map 3-1).

The North Fork Eel River watershed to the north of Hulls Creek (Map 3-1 red dashed line) was the focus of ongoing environmental studies by the author in the 1980s and 1990s (Keter 1992, 1993, 1994, 1995, 1996, 1997, 2013, Keter and Busam 1996). The southern portion of the North Fork Eel River watershed, below the mouth of Hulls Creek, lies within Mendocino County (Map 3-1: blue dashed line). A large part of this area is owned by the Round Valley Indian Reservation and several private land holders. There are also a few isolated tracts of public lands within the North Fork watershed managed by the Bureau of Land Management and the Mendocino National Forest.



Map 3-1
North Fork Eel River Study Area
(CA Topo: 2000)

Dating the Past

Over the last several decades, archaeologists, geologists, as well as scientists in many other disciplines have started to adopt a more secular dating system to replace BC/B.C. (Before Christ) with BCE (Before Common Era), and replacing AD/A.D. (*Anno Domini*: Latin for "in the year of the Lord") with CE (Common Era). One other thing of note is that in the past, AD (or as often A.D.) was written in front of the year--for example AD 520--now that date would be expressed as 520 CE. It is not uncommon; however, when the historic time period is obvious to drop the CE suffix. That practice is also followed in this series of papers.

Archaeologists commonly use two additional systems to date prehistoric sites. The most common is the use of BP/B.P. (Before Present) instead of BCE and CE. The BP date counts back from the year *1950 CE* --it was fixed at this date to account for the passage of time. Thus an archaeological site dating to 2000 BP would date to 50 BCE (2,000 years before 1950).

The second dating system used by archaeologists is related to the radiocarbon dating of organic materials. The terms cal BP, cal BCE (some authors also still use cal BC), and cal CE are abbreviations for "calibrated years" for BP, BCE, and CE respectively. This method of notation--using *cal* as a prefix--signifies that the "wiggles[1]" (natural variations) in the raw radiocarbon data readings (from the original sample) have been adjusted using the latest corrective data. Carbon 14 dates that have not been adjusted are designated as RCYBP or "radiocarbon years before the present."

To date, archaeologists working in northwestern California have been primarily concerned with formulating a chronology in an effort to document when humans first entered this region, to develop an understanding of resource procurement strategies, how they changed over time, and to provide insights as to why and where the earliest human settlements were located.

Archaeological field research conducted within the interior regions of northwestern California has been limited, with most work taking place on public lands. As a result of federal laws and regulations related to the protection of cultural resources, over the last four decades archaeological surveys and excavations on the Six Rivers and Mendocino National Forests, and on Bureau of Land Management lands have contributed significantly to our understanding of the prehistory of northwestern California. Within the North Fork Eel River watershed and in the surrounding Yolla Bolly country, archeological activities have mostly been limited to archaeological surveys, test excavations, and the recording of sites on National Forest and BLM lands. Therefore, much of the prehistory of this remote

[1] Radiocarbon dating was developed by scientists in the late 1940s. Since then, archaeologists have discovered wiggles ("wiggles" is actually the scientific term used by researchers) in the radiocarbon curve used to date materials. These small wiggles are seasonal variations caused by natural processes that result in the fluctuation of atmospheric carbon over time. Adjustments to the radiocarbon curve to correct for the wiggles are called calibrations.

region still remains to be written.

In the mid-1970s the first clues began to appear suggesting the antiquity of the prehistoric record for the interior regions of northwestern California. At that time, Six Rivers National Forest archaeologist Jerry Wylie (1976) noted the existence of Borax Lake projectile points (Image 3-5) dating to as early as 5,000 BP along a series of interconnecting ridgelines between 4,500' to 5,900' in elevation, forming the headwaters divide between the Mad River and the South Fork Trinity River watersheds.

Based on Wylie's survey and report, during the 1980 field season Six Rivers National Forest archaeologists surveyed the crests of these interconnecting ridges--Pilot Ridge, Whiting Ridge, Last Chance Ridge, and South Fork Mountain (the most northerly 10 miles of this 40 mile long ridge), a distance of about 30 miles, recording over 100 prehistoric and historic sites. In 1981 these sites were collectively determined eligible for the National Register of Historic Places, as part of the Pilot Ridge Archaeological and Historical District National Register District (Gmoser and Keter 1983). Then, beginning in 1983, over the next three field seasons, Sonoma State University[2] archaeologists excavated 15 prehistoric sites along the crests of these interconnected ridges (Hildebrandt and Hayes 1983, 1984; Hayes and Hildebrandt 1985).

In addition to the Pilot Ridge excavations, several other archaeological excavations have taken place on Six Rivers National Forest, as well as immediately to the south on the Mendocino National Forest, over the last several decades that are relevant to this overview. The cultural and archaeological data derived from these excavations, along with previous research, has resulted in the formulation of a chronology for the settlement of Northwestern California. This chronology is based on the analysis of linguistic data and archaeological data, as well as the paleo-climatic and environmental data discussed in Chapter 2.

Paleo Indian Period: (circa 13,400 BP to 8,500 BP) [3]

Over the last few decades numerous studies have sought to clarify the archaeological record in an effort determine when humans first entered California (for a good summary of the Paleo-Indian Period see Jones and Klar 2007: 56-62). To date, archaeologists have yet to identify cultural deposits older than about 10,500 BP. In 2002, Jeffrey Rosenthal and Richard T. Fitzgerald published *The Paleo-Archaic Transition in Western California*. It summarizes the research and conclusions made by archaeologists regarding the earliest settlement of California. The authors (2002: 67) note that:

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[2]; The excavation project was undertaken to mitigate impacts from the construction of Forest Road 6N01, under a contract with Six Rivers National Forest.

[3] These "Periods" are broad bands of time and are not precise dates; changes were incremental and took place over centuries rather than decades, and also varied chronologically from region to region (see the Clear Lake region for example; Parker 2008).

> The discovery of fluted projectile points [Image 3-1] throughout western California suggests that the region was first widely occupied sometime between 13,200 to 12,800 cal B.P. Yet there is only very sparse evidence of human occupation until about 2000 to 3000 years later, when numerous sites dating between 10,500 and 9000 cal B.P. appear in coastal and woodland habitats throughout much of central and southern California.

Archaeologists Terry Jones and Kathryn Klar (2007) recognized this problem in their study*: California Prehistory: Colonization, Culture, and Complexity*, noting that:

> In the absence of good chronological data for California's fluted points, Clovis people conceivably originated along the Pacific coast and then moved into the continental interior. It seems more likely, however, the Clovis-like points were left by later Paleo-Indians spreading westward from the interior of North America.

Archaeological evidence suggests that the earliest people to inhabit western California were primarily big game hunters focused on the pursuit and acquisition of large mobile prey like deer and elk (Rosenthal and Fitzgerald 2002: 68). This hypothesis is based on recovered artifact assemblages including large fluted projectile points (Image 3-1) and crescent-shape bifaces (Image 3-2). Even in these earliest Holocene sites, however, the remains of small mammals are common, and many of the oldest sites excavated often included smaller-sized milling tools used for seed processing.

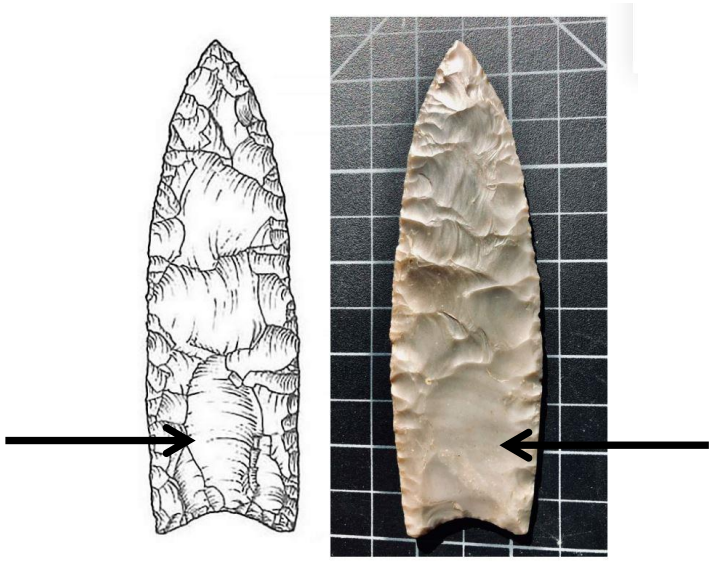

Image 3-1
The thinning at the center of the base of the projectile point with a distinctive groove or flute is characteristic of Clovis points.
Denoyer 2021

Crescent-shaped bifaces dating from about 7,000 BP to 12,000 BP are also generally considered to be diagnostic of the Late Pleistocene and Early Holocene era. There are several theories related to their use; including as scraping or cutting tools or even as a

special kind of projectile point; however, their wide variation in shape (morphology) and their broad distribution across both coastal and interior regions suggests that use and function may have varied depending on time and location.

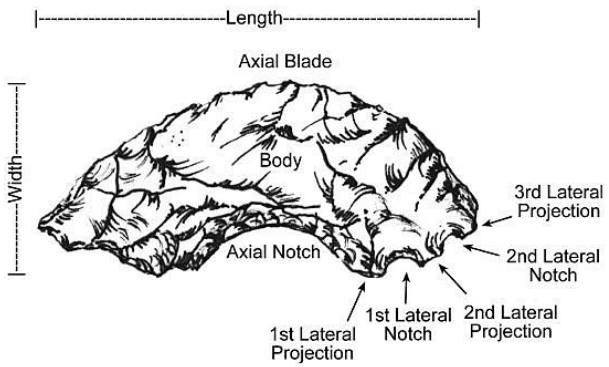

Fig. 3. Terminology for the morphology of chipped stone crescents (adapted from Fenenga 1984).

Image 3-2
Crescent-shaped biface
Erlandson and Braje 2008

Although humans may have inhabited some regions of eastern California as early 13,000 BP, there have been no sites identified in northwestern California that date earlier than about 8,500 BP. The artifacts most commonly recovered from these sites are the fluted (Clovis-like) projectile points and chipped stone crescents characteristic of this Period. To date, fluted points have only been found at a few sites in northwestern California. The closest location to the North Fork Eel River watershed, where a well-defined assemblage dating to this period has been recovered, is at the Borax Lake site near Clear Lake. Archaeologist Greg White et al. (2002) estimate a maximum age of 10,500 cal BP for the Clear Lake artifacts based on obsidian hydration readings.

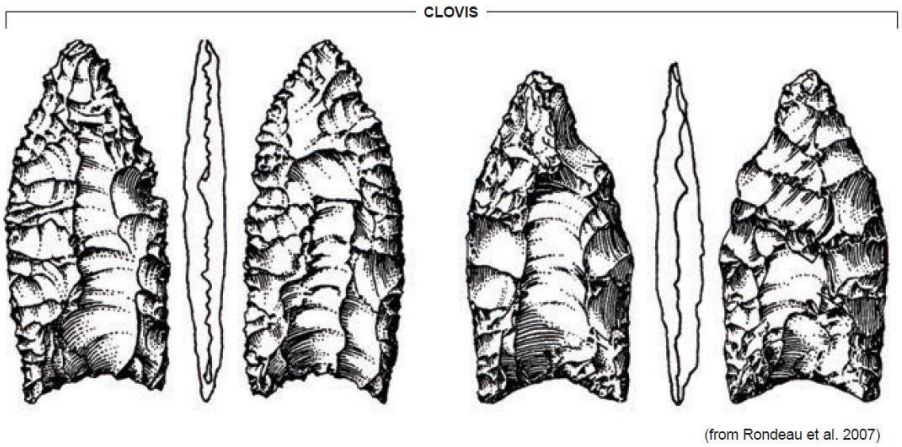

Image 3-3
Clovis fluted projectile points from northwestern California
(Hildebrandt and Hayes 1984)

Early Period 8,500 BP to about 3,000 to 2,800 BP

Approximately 8,500 BP (as discussed in Chapter 2) the North Coast Ranges began a slow transition to a period of warmer and drier climate (milder winters, longer summers and less yearly precipitation) referred to as the mid-Holocene. For that reason it is sometimes referred to as the Altithermal Period or the Xerothermic Period[4].

The beginning of the mid-Holocene marks the first entry of aboriginal peoples into the region, and is roughly coincidental with the region's changing climate. Archaeologists also refer to the Early Period as the Lower Archaic Period, and in the North Coast Ranges, it is sometimes referred to as the Borax Lake Tradition.

The earliest date in interior northwestern California comes from one of the sites excavated on Pilot Ridge in 1982 (Hildebrandt and Hayes 1983). Archaeologists excavated a feature that was determined to be the remains of a structure approximately 5 foot by 5 foot (Images 3-2 to 3-5). Structural indicators included a possible compacted floor, surrounded by three post holes (Hildebrandt and Hayes 1983: 110). This feature contained a significant number of artifacts, including 12 milling slabs (two of which were stacked one on the other), four handstones, three hammerstones, numerous bifaces, projectile points, flaked tools and cores.

Image 3-4
CA-HUM-573: Excavation of pit feature
(T. Keter 1982)

[4] Although it is also commonly referred to as the Xerothermic Period (Simons 1983, Keter 1995), West has indicated that this term tends to overstate somewhat the severity of the changing climate during the Altithermal (James West personal communication 1995).

Image 3-5
CA-HUM-573: Exposed pit feature floor at one meter in depth
Note the stacked milling stones (lower center)
(T. Keter 1982)

Image 3-6
CA-HUM-573: note the stacked milling slabs.
(Scotty Thompson, Sonoma State University 1982)

Twenty years after the Pilot Ridge excavations took place, organic remains from the floor of the pit feature that had long been forgotten and locked away in the Sonoma State archival collections, were "re-discovered" and radio-carbon dated. The report noted that the sample date"...turned out to be 7120 ± 50 radiocarbon years B.P., which calibrates to an age of 7945 cal B.P., or nearly 8,000 years old. This date is one of the oldest ever obtained from a house structure in California" (Fitzgerald and Hildebrandt: n.d.). Richard Fitzgerald and William Hildebrandt (n.d.: 4), who both worked on excavation of the site in 1982, concluded that

> In summary, it is now apparent that the Borax Lake Pattern in both the south and the north was present some 8,000 years ago. The wide geographical distribution of this pattern at circa 8000 B.P. implies that its roots extend even deeper into the Early Holocene and potentially back to the Pleistocene/Holocene transition. Consequently, the archaeological record of the North Coast Ranges appears to be just as ancient and complex as anywhere in California.

Many of the artifacts recovered from sites during the excavations on Pilot Ridge and South Fork Mountain date to the Early Period, suggesting the area was occupied, at least seasonally, as early as 8,000 years ago. The artifacts dating to this period included Borax Lake Pattern (wide-stemmed) projectile points (Image 3-5). Other artifacts collected from the sites included milling slabs, handstones, and relatively large serrated bifaces (worked on both sides with a saw-like edge on some portion of the artifact).

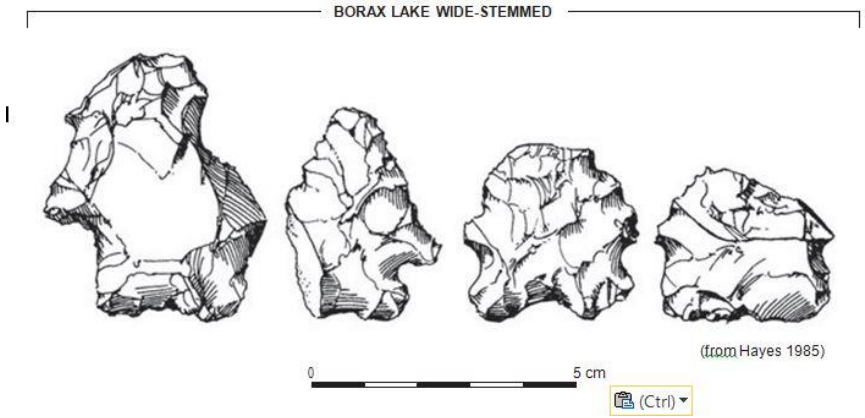

Image 3-5
Early Period Borax projectile points
(Hildebrandt and Hayes 1985: 36)

Several "single component" (i.e. all the artefactual materials recovered from a specific area of a prehistoric site date to the same time period) Borax Lake assemblages dating from this time period were identified on some of the sites excavated. Early Period artifacts included handstones, spall tools, cobble tools, and drills. These assemblages show little variability from site to site (Hildebrandt and Hayes 1983: 110) and appear to be in locations where a number of subsistence oriented activities (processing of both animal and plant resources) took place--implying family groups were camped at these locations. Further support for this hypothesis is the recovery of a greater percentage of artifacts from these single component sites associated with food processing and household maintenance activities during the Early Period than were recovered from either Middle or Late Period sites.

It has been hypothesized that the people living in this region during the Early Period lived in small, highly mobile bands, most likely consisting of one or a small number of extended families. These small groups utilized a "forager" subsistence resource procurement strategy oriented towards a wide range of resources, but emphasizing little handling or

processing time--for example: big game (elk and deer) and hard seeds. A foraging subsistence strategy requires frequent moves by entire social units resulting in an homogenous settlement site structure with similar generalized artifact assemblages. This results in little site-to-site variability in the artifacts recovered from the sites (Hildebrandt and Hayes 1993: 115). With a foraging subsistence strategy little emphasis is placed on storage of food resources, rather "incongruities in the distribution of resources over time and space are solved by moving people from places of declining productivity to areas where foraging opportunities are enhanced" (Hildebrandt and Hayes 1993: 115).

Thus, during the Early Period, it is likely that relatively small, highly mobile groups inhabited some regions of inland northwestern California for at least some portion of the year, moving from location to location as various resources became seasonally available. It is likely that even at this early date, human land-use practices related to subsistence resource procurement activities were having an effect on the environment. Anthropogenic fires, along with natural wildfires, were quite likely a major factor influencing vegetation trajectories and environmental dynamics in the region. In addition, the collection of certain plant species and the hunting of animals would have also influenced the ecosystem. For example, the large Borax Lake projectile points were probably used on spear points or atlatls for the hunting of large game animals, including elk.

It has been hypothesized that the over-hunting of elk and the resulting reduction in their numbers, along with the changing climate, may have influenced the shift during the Middle Period to the utilization of a wider range of resources including acorns.

Middle Period 3,000 BP to 1,500 BP

By about 3000 BP stronger maritime conditions began to prevail along the north coast of California, while inland the climate began to change from a warmer, drier climatic regime to a slightly cooler, moister one (the date varies somewhat across the region). Average yearly temperatures cooled about 1.3 to 2.1 degrees centigrade and precipitation increased resulting in the climate becoming similar to that of today. Just to the east of the coastal redwood belt, the mixed evergreen forest with tanoak became more widespread and expanded further inland (eventually reaching the eastern portion of the North Fork Eel watershed). These moderating conditions, including a shorter dry season, also increased the flow of creeks and rivers and the number of perennial springs.

This shift in northwestern California to a more maritime weather pattern is reflected in the prehistoric record, as changes in settlement patterns in the region seem coincide with the increasingly milder climate. The Middle Period spans that interval of time between about 3,000 BP and 1,500 BP[5]. However, in some areas further south, and at the coast, Mendocino Pattern artifacts (Image 3-6), characteristic of the Middle Period show up in the archaeological record as early as 4,500 BP to 5,000 BP. Very little is known regarding the

[5] Some archaeologists have further divided the Middle Period into the Upper Archaic and Lower Archaic Periods.

earliest date for introduction of the Mendocino Pattern into interior regions of southwestern Trinity County. At some inland sites further north in Humboldt and Del Norte County, however, these artifacts first show up in the archaeological record as late as 2,500 BP to 3,000 BP.

As discussed in Chapter 2, palynological pollen data indicates that as a result of the changing climate, montane forests began to increasingly dominate at higher elevations, and some conifer species like Douglas fir, as well as white oak and black oak, began to migrate downslope as much as 1,000 feet in elevation. The changing climate appears to have resulted in a shift in subsistence resource procurement strategies, and a decline in the intensity of use of the higher altitude regions in northwestern California like Pilot Ridge and South Fork Mountain.

Archaeological evidence indicates that artifact assemblages dating to this period differ significantly from those of the earlier Borax Lake Period (Pattern) when the uplands were dominated by residential sites (Hildebrandt and Hayes 1993). The artifact assemblages dating to the Middle Period include Willits Series, Mendocino Corner-notched, and McKee projectile points, bifaces, flaked tools, and mortars and pestles (Image 3-6).

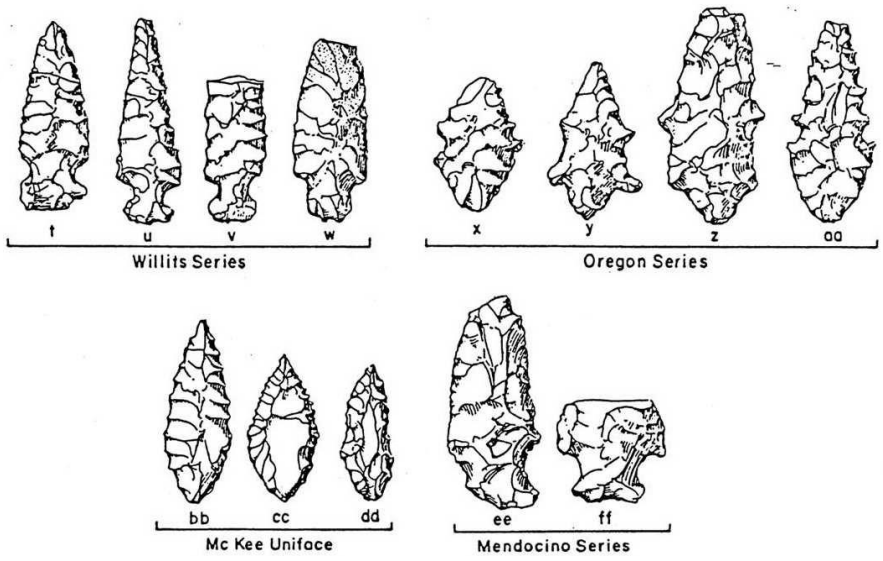

Image 3-6
Middle Period projectile points
(Hildebrandt and Hayes 1984)

Archaeological evidence suggests that with a more moderating climate, there was a shift away from a "forager" based resources procurement strategy towards a "collector" based resource procurement strategy. Collectors store foods for some part of the year; usually in sedentary or semi-sedentary villages. In addition, rather than a need for group mobility, as in the forager resource procurement strategy, the distribution of resources across time and space are solved by moving the resources to consumers, resulting in fewer residential moves (Simons 1983: 1.23).

Land-use activities in relation to settlement patterns are, therefore, also changed. Under the collector strategy, inter-site variability, or the kinds of artefactual materials found on sites becomes more pronounced. For example, there are residential sites (villages), as well as various other types seasonal or temporary sites used for fishing, hunting and for the collection and processing of specific plant resources.

In addition to changes in climate and the effects by natural and anthropogenic fires on the ecosystem, another factor that may have influenced site settlement patterns in northwestern California was an increase in the human population. Population growth creates the need for more energy to be extracted per unit of land in a given area. Generally this is accomplished by an increase in the use of lower ranked subsistence resources that require more time to secure, to process, or are less palatable. Given the increasing population and intensification of the use of a wide range of plant and animal resources, it is likely that by the end of the Middle Period, the ecosystem of the Yolla Bolly country was being affected to a significant extent by human land-use activities.

Late Period: 1,500 BP to the Beginning of the Historic Period

The Late Period, also referred to as the Emergent Period in northwestern California, dates from approximately 1,500 BP to the beginning of the historic era in the mid-19th century. The artifact assemblages recovered from the Late Period sites on Pilot Ridge were predominantly of flaked stone tools (i.e. projectile points, cores, bifaces and other flaked tools) similar to artifact assemblages found elsewhere in Middle Period sites (Hildebrandt and Hayes 1993: 112).

After about 1500 BP, several major changes are reflected in the archaeological record of northwestern California and southwestern Oregon--especially along the coast at Humboldt Bay and in areas immediately to the north (Hildebrandt and Levulett 2002; Tushingham 2009*).* Site frequency increases dramatically at lower elevations, and it is likely that permanent villages were established for the first time at lower elevations in the North Fork Eel River watershed resulting in a dramatic increase in population. Also, artifact assemblages become increasingly diverse, suggesting a wide range of subsistence procurement activities.

The Tuluwat Pattern[6] (formerly referred to as the Gunther Pattern) is characteristic of the Late Period in northwestern California and includes Trinity corner-notched, Trinity diamond-shaped, Tuluwat series projectile points (Image 3-7), and milling equipment--including the hopper mortar and pestle.

[6] Located in Humboldt Bay Tuluwat Island, formerly called Gunther Island, has been formally returned to the Wiyot who have given the island back its original name.

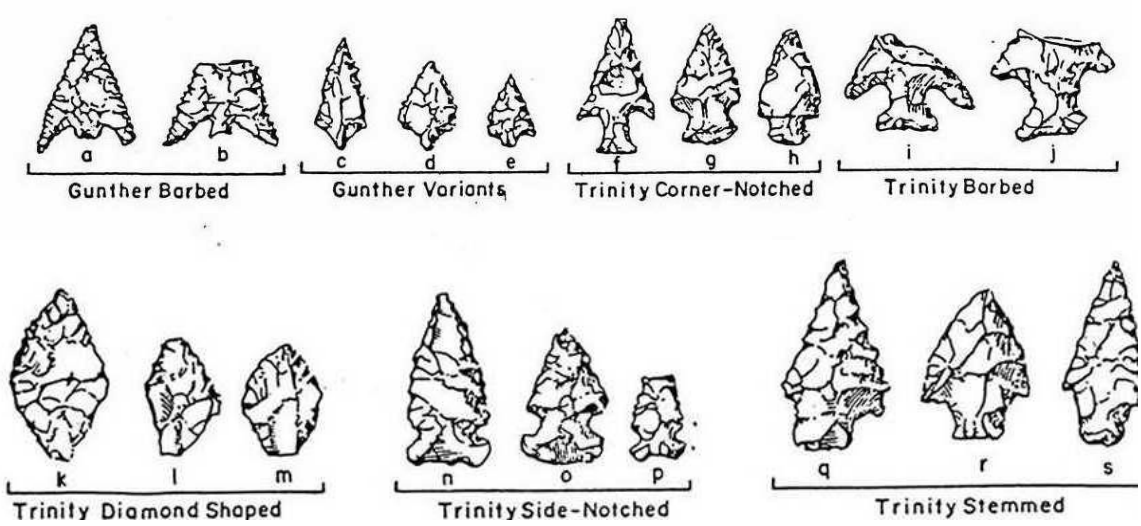

Image 3-7
Late Period Projectile Points
Gunther Barbed=Tuluwat Barbed
(Hildebrandt and Hayes 1984)

Over the next several centuries, there was a continuing increase in population density with an intensification in the collection of lowland subsistence resources like fish, acorns, bulbs, seeds, tubers, etc. There was also a greater emphasis placed on the storage of resources for winter consumption. Single component sites from the Late Period, as noted earlier, are more commonly found at higher altitudes in the mountainous regions, and are of a more limited and specialized nature--reflecting their use as temporary camps (Simons 1983: 1.26). These sites were visited for specific task or specialized resource procurement activities (for example, collecting acorns or basketry materials, or butchering animals), while sedentary villages were established at lower altitudes on terraces located along rivers or perennial creeks.

The First Residents of the North Fork Eel River and the Yolla Bolly Country

The Main Eel River flows north about 200 miles from its headwaters in central Mendocino County, before emptying into the Pacific Ocean eight miles south of Humboldt Bay. It is the third largest watershed in California, draining an area of 3,684 miles. There are four major tributaries--the Van Duzen River and the three major branches or "forks" --the South, Middle, and North Forks--to what locals call the "Main Eel River" (Map 3-2). At about 92,500 acres and 35.8 miles in length, the North Fork Eel River is the smallest of the four watersheds.

Map 3-2
The main tributaries and watersheds of the Eel River
(Sub Basins Eel River, Cal Water)

One possible hypothesis for when and who were the first residents to permanently settle in the North Fork Eel River watershed and the Yolla Bolly country is based on linguistic evidence. The Yuki language is a language isolate with no clear link to another language family, and it is considered to be the oldest language in this region (Golla 2007: 81). Linguist Kenneth Whistler (1978) suggests that prior to about 1,100 CE, Yuki (or proto-Yuki) territory extended further north from Round Valley than today, and encompassed the southern portion of the North Fork Eel watershed. Whistler (1978) theorizes that the more northerly portions of the North Fork Eel River watershed (north of the mouth of Hulls Creek and the headwaters region of Salt Creek) was lightly inhabited, or only visited periodically by Hokan speakers (proto-Karuk). This hypothesis is based on the proximity and the antiquity of the Yukian peoples inhabiting the region directly to the south, and the linguistic evidence related to the early arrival of Hokan speakers as the earliest inhabitants of the northern portion of inland Humboldt County.

The linguistic evidence also suggests that the first people to spend a significant amount of

time, possibly establishing seasonal or permanent villages in the Mad River and North Fork Eel River watersheds, were Penutian speakers. They pre-date the movement of Athabascan speakers (proto-Wailaki see below) into the region by as much as half a millennium. The Penutian Language Family includes speakers of the Wintu, Nomlaki, and Patwin languages. Analysis of historical linguistic data by Whistler (1977) indicates that in Oregon between about 3,000 and 2,500 BP--possibly reflecting a moderating climate-- proto-Wintun split apart, and Wintu/Nomlaki became a discrete language branch about 500 years later. By about 1,500 BP some Wintu/Nomlaki speakers began moving south out of Oregon and settled in the northern Sacramento Valley region. Eventually, some Wintu speakers in the Sacramento Valley migrated to the west, moving up the various tributaries of the Sacramento River and into upper reaches of the South Fork Trinity River watershed. This hypothesis is also supported by the prehistoric record--refer to the obsidian sourcing data for the Yolla Bolly country discussed in the next section.

Approximately 1,500 years ago, the Wiyot, and soon thereafter the Yurok (both speakers of Algic languages), entered northwestern California--possibly from the Columbia Plateau region (Whistler 1979, Fredrickson 1984, Moratto 1984: 565). The Wiyot occupied the previously underused (i.e. lightly inhabited, possibly only on a seasonal basis) coastal areas and estuary habitats surrounding Humboldt Bay, while the Yurok occupied the Lower Klamath River watershed and adjacent coastal lands. It is hypothesized that their movement into this region was made possible due to their superior technological abilities related to fishing, boat building, and the storage of salmon.

While the Wiyot occupied the lower regions of the Eel River watershed, it is likely that somewhat later in time, by around 1,200 years ago further to the east, Wintu (or proto Wintu) speakers had already settled in Hayfork Valley, and, at least seasonally, by this time were visiting the upper Van Duzen River (Hettenshaw Valley), Mad River, and North Fork Eel River watersheds. Athabascan speakers were the last wave of immigrants to settle in northwestern California about 800 years ago, bringing with them knowledge of specialized subsistence strategies in forested and riverine environments, as well as new technologies; for example, the toggle harpoon and sinew-backed bow (Fredrickson 1973, 1984).

Archaeological Investigations in and adjacent to the North Fork Eel River Watershed

It is not yet clear when humans first entered the North Fork Eel River region, although there is little doubt there were visitors prior to the Late Period. To date, archaeological investigations within the upper Eel River watershed have taken place for the most part on sites located in the Mendocino National Forest (see for example, Jackson 1974, 1976, Eidsness 1986, Waechter and Origer 1992, Huberland 1993). These sites are located to the south and east of the North Fork Eel River watershed in ethnographic Yuki territory.

The data recovered from these sites tends to strengthen the case that the Wailaki and Yuki shared a similar material cultural during the Late Period. Reflecting the north-south break between the Northwest Culture Area and the California Culture Area, however, the sites

excavated in the Middle Fork Eel River watershed also contained artifact assemblages[7] (for example, diagnostic projectile points) that can be linked to the Pomo living further south in the Russian River watershed of southern Mendocino, Sonoma, and Lake Counties.

The effects to the environment beginning about 3,000 years ago caused by the changing climate, and the resulting increase in the availability of subsistence resources, would have made the North Fork Eel River watershed, and the surrounding Yolla Bolly country, more attractive for permanent settlement by humans. This is reflected in the archaeological record with a limited number of artifacts recovered from lower elevation sites dating to the Early Period, while most of the artefactual materials recovered date from the Late Period.

Only one large scale archaeological excavation has taken place within the North Fork Eel watershed. In July of 1991 archaeologists from the University of California Davis excavated a known ethnographic village site on BLM lands in the vicinity of the North Fork and the mouth of Hulls Creek. Unfortunately, no report was ever completed for this project. It appears, however, an initial inventory found that nearly all of the materials recovered dated to the Late Period (personal knowledge having worked on the project). The artifacts from this site have been labeled and were cataloged on a spreadsheet by UC Davis archaeologists (Mark Basgall personal communication). At this time (2022) the artifacts are in the possession of individuals of Wailaki descent living in Round Valley.

Prehistoric Site CA-TRI-1297

To date only one prehistoric site, CA-TRI-1297, in the Yolla Bolly country has been excavated. A full analysis of the artifacts recovered from the site was completed and the results published. The site was disturbed in 1991 by a logging company during the construction of a nearby Forest Service road[8], where two small ponds adjacent to the two springs found on the site were illegally constructed. In addition to the illegal ponds, an access road over 300 meters long was constructed down to the ponds from nearby Forest Service Road 27N02.

These illegal activities resulted in major damage to the site's integrity. The excavation was undertaken as part of a mitigation agreement imposed by a federal court after Six Rivers National Forest filed a civil suit against the logging company for violation of Section 106 of the National Historic Preservation Act and the Archaeological Resources Protection Act (ARPA). The judge ruled in favor of the plaintiffs (Six Rivers National Forest), and as a result, in August of 1993 archaeologists from the cultural resources firm Dames and Moore, under contract to Six Rivers National Forest, excavated the site. It is located at an elevation

[7] Referred to as the Augustine Pattern; see Moratto 1984: 496 and Jones and Klar; 2007: 94).

[8] This was the first case in the U.S. filed by the federal government for a violation of the cultural resources laws (36 CFR 296) under the civil side of the Archaeological Resources Protection Act (ARPA). The judge found in favor of Six Rivers National Forest and the federal government was awarded $30,000. This decision set the precedent for future cases prosecuted under the civil side of the ARPA regulations.

of about 4,300 feet, only a few hundred meters to the east of Jones Ridge--the watershed divide between the North Fork Eel River and the Mad River--on a series of small--almost flat--benches surrounding two small springs near the headwaters of north flowing Trout Creek, a tributary of the Mad River.

It is important to note that an historic trail is located just to the west of the site on the crest of Jones Ridge. This trail once connected the lower Mad River country with the headwaters divide between the Mad River and upper Middle Fork Eel watersheds. During the 1850s and 1860s this section of trail was a part of the Round Valley-Weaverville Trail (TCC Trails Section: Trail HTNF-11). Given its strategic location, there is little doubt that this trail dates to the prehistoric period.

A significant amount of artefactual materials were recovered from the site (Nilsson and Bevill 1994: 1). Twelve artifacts were classified as ground stone or battered stone implements. This included fragments of eight gray sandstone cobbles, and fragments of one pestle and one metate. Some of the artifacts collected dated to the Early Period--including the fragment of a Borax Lake projectile point (Image 3-5). Only a few artifacts dated to the Middle Period--including two Mendocino Series projectile points (Image 3-6). Most of the materials found on the site, however, dated to the Late Period. This included a number of Tuluwat barbed and Trinity Series projectile points diagnostic of the Late Period (3-7).

The results of the obsidian hydration analysis of materials recovered from the site indicated that most of the samples dated to the Late Period; although a few flakes dated to the Early and Middle Periods. Only four specimens of obsidian were attributed to the Borax Lake source located to the south in Mendocino County. The remainder of specimens sourced came from northeastern California, including the Medicine Lake Highlands sources (Grasshopper Flat/ Lost Iron Well/Red Switchback) and Buck Mountain in the Warner Mountains. This finding adds to the evidence suggesting that the Wintu had visited this area prior to southern Athabascan movement into the region. This north/south obsidian source ratio may also have been in part a result of the close affinal relations between the Wailaki and the Nomlaki residing to the east of South Fork Mountain during the Late Period (Keter 1993, 2009). Nilsson and Bevill (1994: 108) concluded that:

> Data gathered from CA-TRI-1297 suggest that the site served as a temporary camp or task-specific area. The lack of a more diversified artifact assemblage, as well as the absence of a well-developed midden, imply that site occupation was likely seasonal in nature. Activities were focused principally on the reduction of local chert tool stone, but also included late stage reduction and thinning of imported obsidian bifacial tools. Additional activities likely included the processing of plant materials using both mortar and pestle and handstone and millingstone technologies.
>
> Based on the findings of the current testing program, CA-TRI-1297 is recommended eligible for the National Register of Historic Places under Criterion D of 36 CFR 60.4, as it has yielded information important to prehistory.

Archaeological Excavations on the Mendocino National Forest

Further south in ethnographic Yuki territory, as with site CA-TRI-1297, most of the materials recovered from archaeological excavations at lower elevations on the Mendocino National Forest date to the Middle and Late Periods. The closest site to the North Fork Eel River watershed that has been excavated, CA-MEN-935, is located on the Mendocino National Forest less than ten air miles to the east of the North Fork/Middle Fork watershed divide--just south of Beaver Creek--at an elevation of about 3,000'. Mendocino National Forest Archaeologist Amy Huberland (1993: 99) concluded based on the data recovered during the excavation that:

> Diagnostic projectile points and obsidian hydration results suggest the site was occupied from Lower Archaic through Emergent time periods (ca. 8,000 B.P. to A.D. 1800) and most intensively during the earlier rather than the later periods. Hunting and food processing were important activities at the site, mostly during the Archaic Period. During early use, the site probably functioned as a seasonal or permanent base camp, while later use appears to have been much less intensive and probably task specific.

As with the other sites excavated in ethnographic Yuki territory, most of the obsidian--about 87%--comes from the Borax Lake source to the south, with about 13% coming from the Medicine Lakes Highland region.

A number of other sites have also been excavated within the Mendocino National Forest over the last several decades. At lower elevations on sites like site CA-MEN-1793, located to the east of Round Valley, most of the artifacts recovered date from about 3,000 BP to the ethnographic period (Waechter and Origer 1992). Another site, MEN-320/643 located in the vicinity of the confluence of the Middle Fork Eel and Black Rock Creek, was test excavated on several occasions (Holson and Fredrickson 1980, Eidsness 1986; Holson 1986). The findings indicate that MEN-320/643 has strong middle and late period associations--based on projectile point styles, beads, and the obsidian hydration analysis. Although some of the artifacts (Borax Lake projectile points) date to the Early Period, most of the diagnostic artifacts date from the Upper Archaic (2500 BP) to the historic contact period.

Local Franciscan chert dominated the flaked stone assemblage and represented over 90 percent of the artefactual materials on the site (Eidsness 1986: 113). The sources identified for the obsidian recovered from MEN 320/643, as with other lowland sites in the region, according to Huberland (1988), indicate most of the obsidian comes from sources to the south (78%), the most prominent being Borax Lake (71%).

Another site, CA-MEN-1793, located to the east of Round Valley in the upper part of the Black Butte watershed at 2,900' in elevation, was tested by Waechter and Origer in 1992. They noted that this site contained two to three housepits, and a small discrete midden deposit. Testing revealed a well-developed late period component dating from 500 CE

through historic contact (as evidenced by the presence of projectile points and debitage manufactured with bottle glass).

Interestingly, obsidian debitage dominated over chert. The Borax Lake obsidian source was predominant (85 percent); other southern sources included Mt. Konocti (1.5 percent) and Napa (0.5 percent). Obsidian sourced from northeastern California included Medicine Lake Highlands (12 percent), and Tuscan (0.1 percent) in Modoc County. Groundstone was dominated by pestles and hammerstones, and only one hand stone and one milling stone were recovered. The authors categorized the site as a subsidiary village during the late ethnographic period, possibly used as a refuge site during the early historic period (for a definition and discussion of refuge sites see Keter 2017).

It appears, based on the data from archaeological excavations in northern Mendocino County that, like the Yolla Bolly country and Pilot Ridge/South Fork Mountain located further to the north, as Huberland notes (1993: 14) the data:

> ...suggest a shift in subsistence systems from an earlier pattern of widely dispersed low density land use favoring high elevations to a later pattern of high density use of certain types of lowland zones.

Six Rivers National Forest Obsidian Sourcing Study

Anthropologists have theorized that the Yolla Bolly country marks the general north/south boundary or "cultural break" in the interior North Coast Ranges during the late prehistoric period (also referred to as the ethnographic period--see Chapter 4) between the Northwest Coast Culture Area and the California Culture Area to the south (Keter 1993, 2009, Kroeber 1925). The Northwest Coast Culture Area (tribes sharing similar cultures despite linguistic differences) extends north from about the Humboldt Bay region, along the Oregon and Washington coasts into southern British Columbia. The California Culture Area encompasses most of the remaining portion of the state to the south from about Round Valley, and to the west of the Sierra Nevada/Great Basin divide (Kroeber 1925). Although it is likely that this "boundary" fluctuated over time, it appears from the linguistic data cited earlier, that this change was not a great distance to the south or north.

In 1995, to test this hypothesis archaeologically, the Six Rivers National Forest Heritage Resources Department funded a study by Archaeologist Michael Griffin to determine the source of the obsidian artifacts and flakes collected in 1994 and 1995 from several sites located in the upper headwaters region of the Mad River and North Fork Eel River watersheds. Griffin, using X-ray fluorescence and visual analysis, analyzed 92 obsidian specimens collected from eleven sites--including the obsidian specimens collected at CA-TRI-1297 (Keter and Griffin 1996).

Griffin found that the vast majority of obsidian artefactual materials sourced from these sites (Image 3-8), like those from Pilot Ridge (Image 3-9), and the crest of South Fork

Mountain (Image 3-10), came from sources in northeastern California, with 70% for the Early Period, 77% for the Middle Period, and 78% from the Late Period (Keter and Griffin 1996: 7-8). The northeastern California obsidian sources were GF/LIW/RS (Grasshopper Flat/ Lost Iron Wells/ Red Switchback), East Medicine Lake, Tuscan, and Buck Mountain. These obsidian sources accounted for 76% of the collection; the most common source was GF/LIW/RS (61%), followed by Tuscan (10%). The southern sources Borax Lake and Napa Valley represented 23% of the specimens collected. Griffin concluded (Keter and Griffin 1996: 8) that:

> Based on this evidence, it appears that a boundary between northern and southern obsidian exchange systems is located along the divide between the Mad, Middle Fork Eel and South Fork Trinity Rivers. North of this divide, including the upper drainage of the North Fork Eel, obsidian comes primarily from sources in northeastern California. South of here, the reverse is true, with most obsidian coming from sources in the southern part of the North Coast Ranges. Fredrickson (1986, 1987) proposes that such differences in obsidian procurement patterns indicate a considerable degree of social distance [interaction between groups]. Although Kroeber attributed the existence of a cultural boundary in this part of the North Coast Ranges to the presence of a strong Central California culture (Pomo) in the south, this recent evidence suggests that this boundary predates ethnographically described cultures and has been relatively stable for perhaps as long as 4500 years.

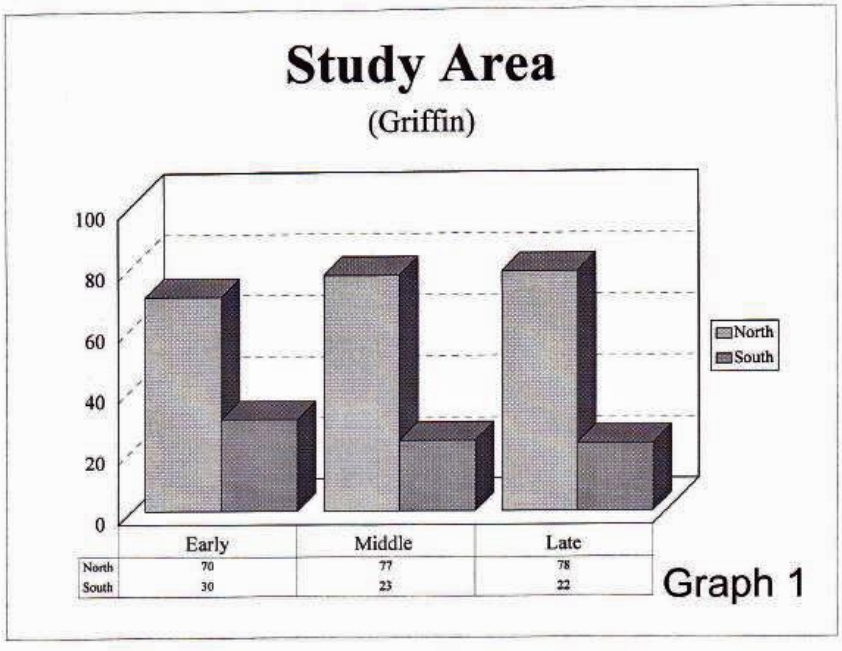

Image 3-8

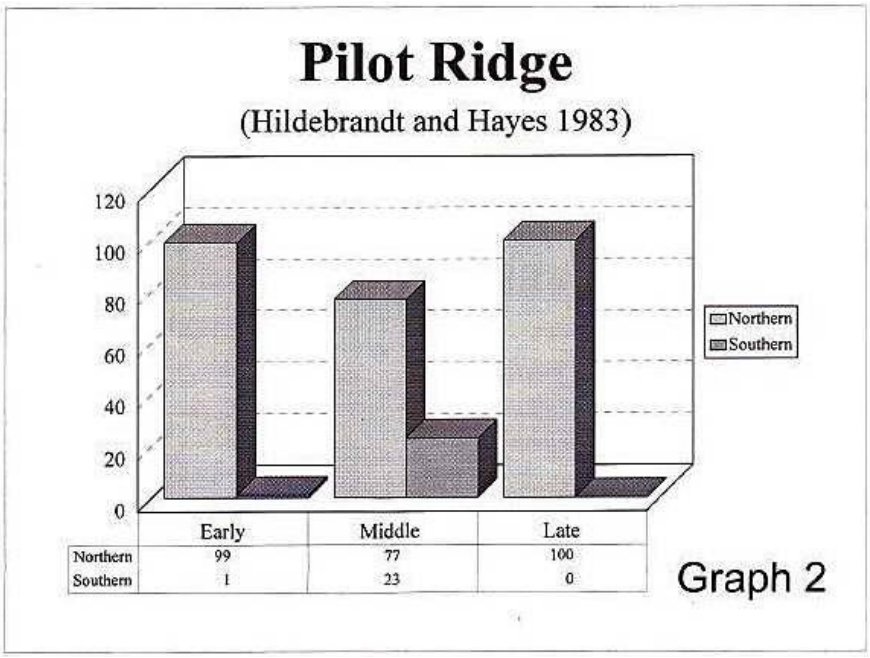

Image 3-9

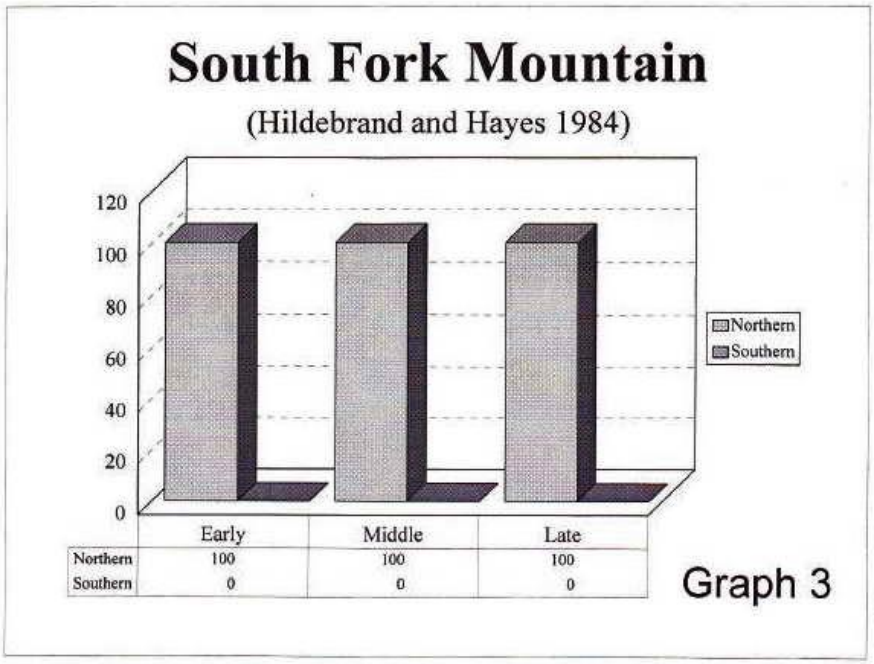

Image 3-10

In contrast, as noted earlier, the obsidian sourcing data collected from the excavations at a number of sites on the Mendocino National Forest like Beaver Glade (CA-MEN-935) found that most of the obsidian came from sources located to the south (Image 3-11).

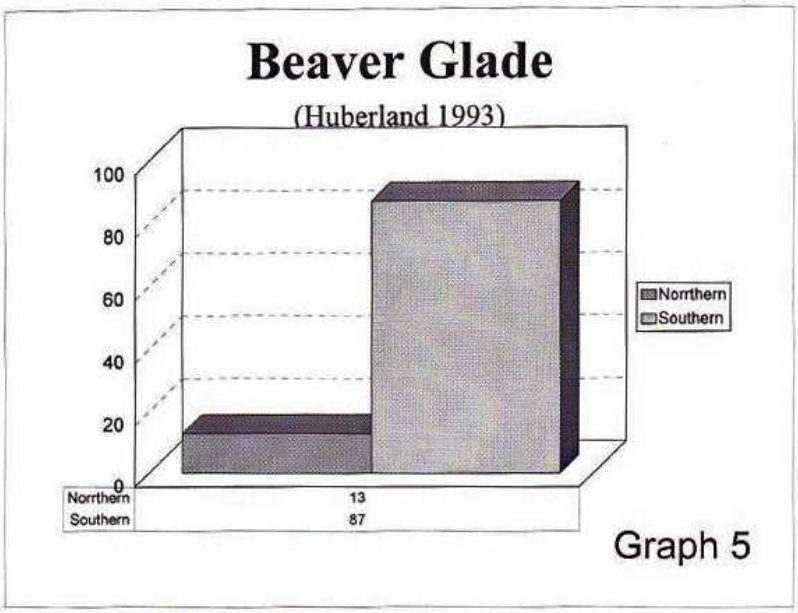

Image 3-11

It is clear from the obsidian sourcing data in Griffin's study, and the sourcing of obsidian from sites further to the south in Mendocino County, as discussed earlier, that the Yolla Bolly country marks the north/south break in northwestern California between the obsidian coming into region from northeastern California and that coming into the region from Mendocino and Sonoma Counties in the south.

Settlement of the Yolla Bolly Country during the Prehistoric Period

The following section provides an overview of the settlement of the North Fork watershed and Yolla Bolly country based on the linguistic, ethnographic, and archaeological data presented in this Chapter, and the climatic history of the region found in Chapter 2.

Early Period (Lower/Middle Archaic) 8,500 BP-3,000/2,500 BP

The warmer drier climatic conditions in the Yolla Bolly country during the Altithermal Period would have not only affected the distribution of many plant species, but also the presence, distribution, and the populations of many avian, terrestrial, and aquatic species of animals. For example, as a result of the longer drier summers, it is likely some subsistence resources including species of clovers and other "greens," and bulbous plants were probably less abundant than later during the Middle and Late Periods.

Based on the archaeological record, it is hypothesized that during the Early Period the Yolla Bolly country was only lightly populated. This is likely due to the insufficient availability of desired subsistence resources that would have permitted year around settlement of a

substantial aboriginal population. It is not clear if the availability of acorns at lower elevations was an important factor affecting human occupation during the Altithermal; regional models and artifact assemblages from Pilot Ridge suggest that acorns were not a major food resource before about 3,000 to 2,500 BP. Supporting this hypothesis is the notable lack of groundstone artifacts used for acorn processing (they are usually larger than those used to process seeds) during the Early Period from CA-TRI-1297, or from single component sites (all materials on the site date to the same time period) on Pilot Ridge (Hildebrandt and Hayes 1983).

The climate during the Altithermal--including warmer, longer summers, with less annual precipitation, and reduced snowpack--would have resulted in fewer perennial springs feeding the North Fork Eel River and its tributaries; lowering significantly summer stream flows. Further, it is likely that drier conditions would have also resulted in a loss of riparian vegetation, negatively affecting aquatic habitat. Given the critical need for cold water temperatures and adequate water flow to maintain critical summer habitat for many species of fish, it is likely that there was a significant reduction, or even possibly, there were no runs of anadromous fish in the North Fork.

Moreover, resident fish populations would also have been much lower or possibly non-existent in the North Fork and its tributaries (Keter 1992). Today summer water flows are extremely low with much of the riparian vegetation damaged by grazing and other human land use activities over the last century and a half (Images 3-12 and 3-13). As a result, the water temperature is too high to provide good anadromous fish habitat. [9]

Image 3-12
North Fork Eel River
View south to Packwood Flat (upper center) from the mouth of Salt Creek
(T. Keter July 24, 2002)

[9] Today, there is a barrier of slide debris and a large rock (called Split Rock by the locals) about five miles above the mouth of the North Fork between Asbil Creek and Wilson Creek. This large rock barrier appears to have been caused by the 1964 flood (this slide area may have been active historically, presenting some kind of a barrier prior to 1964). This is a significant barrier and has contributed to the lack of anadromous fish in the upper portions of the North Fork since 1964. See Keter 1992 for more on this subject.

Image 3-13
View north to the confluence of Salt Creek (arrow) coming in from the west
and the North Fork flowing to the south (upper right to lower left)
By mid-summer water flow is almost non-existent
--note also the lack of riparian vegetation
(T. Keter July 24, 2002)

The environmental conditions during the Altithermal Period would also have affected the habitat of many animal species. For example, large game, like deer, were an important subsistence resource. Today, deer in this region during the long hot summers migrate upslope (Burton n.d.: 30) to the high Yolla Bolly Mountains, the Grizzly Mountain/Round Mountain/Lassics region, South Fork Mountain, and other areas above about 4,000 feet. Given the fact that during the Altithermal Period vegetation communities moved up slope approximately 1,000 feet in response to warmer temperatures, it is likely that the summer deer range was also correspondingly somewhat higher than today at about 5,000 feet in elevation. This rise in elevation would have reduced significantly the amount of habitat available for summer range as many of the peaks and ridge lines in the Yolla Bolly country--including Jones Ridge, Mad River Ridge, and Haman Ridge--are between 3,500' and 4,500' in elevation. Thus, the concentration of deer above about 5,000' during the Altithermal may help to explain the presence of so many Early Period sites found at higher elevations in this region.

It appears based on interview data that elk were not present in the Yolla Bolly country at the beginning of the historic period in the early 1850s. One consultant, Lee Stapp (TCC Vol 1 Appendix 6: Interview #448), indicated that his father had settled in the Yolla Bolly country in the 1880s and had never seen an elk in the area. The closest point to the North Fork watershed that he had ever encountered an elk was near Lemonade Spring on South Fork Mountain over 20 miles to the northeast. Given the even warmer temperatures of the Altithermal Period than those of today, it is unlikely that a significant elk population inhabited the North Fork watershed, except perhaps in a few higher elevation areas like Grizzly Mountain.

The lack of artefactual materials dating from the Early Period in the lower elevations of the

Yolla Bolly country suggests that warmer drier conditions and scarce water sources would have limited the number of people able to support themselves on a year around basis--possibly preventing the establishment of permanent villages, or even limiting the number of temporary seasonal camps. This hypothesis that fewer subsistence resources would have been available during the Altithermal Period, and thus would have limited permanent settlement, appears to be confirmed in the archaeological record. For example, as noted earlier, the excavations at the Hulls Creek site, CA-TRI-1297, and the village sites excavated immediately to the south on the Mendocino National Forest, contain few artefactual materials dating to the Early and Middle Periods.

Middle Period (Lower Archaic) 3,000-2,500 BP to about 1,500 BP

By about 2,500 to 3,000 years ago, plants and animals began responding to changes in climatic conditions as a more maritime weather pattern began to dominate northwestern California (see Chapter 2).. As the more xeric species of oaks (blue oak and valley oak) retreated to the south, and the extent of the savanna/grassland and blue oak/gray pine woodland vegetation types within the watershed began to decline, white oak**,** Douglas-fir, and other higher elevations plant species began to migrate downslope and spread across the lower elevations of the Yolla Bolly country.

Grasses, forbs, bulbous plants, and other plant species were also responding to climate change. It is likely that an extended period was necessary for vegetation associations to respond to the changing climatic conditions. Several research papers (for example Ritchie 1986: 65-74, Cole 1985: 289-303) have discussed the response of vegetation to changes in climate. As noted in Chapter 2, it appears that once established vegetation associations tend to maintain themselves (this is sometimes referred to as "vegetation inertia") long after suitable ecological conditions for their growth have disappeared. Therefore, the vegetation associations and communities, and their distribution across the landscape did not simply change over-night, rather, it was a slow evolutionary process probably measured in centuries. Natural fire played a role in slowing the rate of change. It is also likely it was about this time that human activities including anthropogenic fires and subsistence procurement activities would have begun to affect the ecosystem and landscape.

This newer more maritime climatic pattern (milder temperatures, a shorter dry season, reduced evapotranspiration, and increased precipitation) would have resulted in an increase in the number of perennial springs, increased stream flows, and an increase in riparian habitat, greatly improving conditions for anadromous and resident fish species.

With the changing climate and the availability of subsistence resources increasing over the centuries, it is likely that by the end of the Middle Period the North Fork Eel River watershed was being visited, at least on a seasonal basis, or possibly the first permanent villages were being established on terraces situated along the North Fork Eel River.

Late Period (Emergent Period) 1,500 BP to the beginning of the Historic Period

Perhaps, as the theory holds, the arrival of the first permanent residents within the North Fork watershed was roughly contemporaneous with, or could only have occurred, as the region became more productive as a result of the moderating climate. It is possible, therefore, that the movement of Penutian speakers (proto Wintu and proto Nomlaki) from east of South Fork Mountain into the North Fork watershed and the Yolla Bolly country began about this time. Whatever the case, as reflected in the archaeological record, by the beginning of the Late Period it is likely humans through their land-use activities (including anthropogenic fires) were becoming a significant factor influencing the ecosystem, and the kinds of plants and animals found in the region.

The linguistic data for northwestern California discussed earlier suggests that by around 1,100 years ago the Main Eel River watershed was already inhabited by a number of linguistically and culturally diverse groups--including Hokan, Penutian, and Yukian speakers, and that this migration into the region was followed within a few centuries by the movement of Athabaskan speakers into northwestern California.

With their arrival, Athabascan speakers made up the final wave of immigrants into northwestern California. The Athabascan speaking peoples who settled in northwestern California can be broadly divided into three distinct linguistic subgroups. The Tolowa were the most northerly group. Their territory was centered on the coastal plain that fronts the high mountains and deep canyons of the Smith River drainage near the California/Oregon border. To the south, the Hupa and the Tsnungwe occupied portions of the Trinity River watershed, while the closely related Chilula and Whilkut occupied much of northwestern Humboldt County and the Redwood Creek watershed. Further to the south, the Athabascan speakers inhabiting the central and southern portions of Humboldt County, northern Mendocino County, and southwestern Trinity County during the ethnographic period are referred to collectively as the southern Athabaskans. For purposes of this study, the ethnographic period dates from the entry of Athabascan speakers into Yolla Bolly country about 800 years ago.

See Chapter 4 (in press) for a discussion regarding the movement into, and the settlement of the southern Athabascans in Yolla Bolly country, as well as discussions on social organization and the territorial boundaries.

References Cited

Burton, Timothy

n.d. Ruth Deer Herd Management Plan. California Department of Fish and Game, U.S. Forest Service. On file Six Rivers National Forest, Eureka.

Cole, Kenneth

1985 Past Rates of Change, Species Richness and a Model of Vegetational Inertia, in the Grand Canyon, Arizona. *The American Naturalist* Vol 125 No. 2:289-303.

Eidsness, Janet P.

1986 Archaeological Data Recovery at CA-MEN-320/643 for the Proposed Black Butte Bridge. Mendocino National Forest, Willows, Ca.

Fredrickson, David A.

1973 Early Cultures of the North Coast North Coast Ranges, California. PhD. Dissertation. Department of Anthropology, University of California, Davis.

1984 The North Coast Region. In California Archaeology, Edited by M. J. Morratto, pp. 421-547. Academic Press, New York

Golla, Victor

2007 Linguistic Prehistory. In California Prehistory: Colonization, Culture, and Complexity (Jones and Klar eds.). Altamira Press London, New York.

Gmoser, Glenn and Thomas S. Keter

1983 Pilot Ridge Archaeological and Historical District National Register Nomination. On file Six Rivers National Forest, Eureka.

Hayes, John F. and William R. Hildebrandt

1985 Archaeological Investigation on Pilot Ridge: Results of the 1984 Field Season. On File Six Rivers National Forest, Eureka.

Hildebrandt William R. and John F. Hayes

1983 Archaeological Investigations on Pilot Ridge, Six Rivers National Forest. On File Six Rivers National Forest, Eureka.

1984 Archaeological Investigations on South Fork Mountain, Six Rivers and Trinity National Forests. On File Six Rivers National Forest, Eureka.

Holson John J. and David Fredrickson

1980 Archaeological Survey of County Road 338/Forest Highway 7 and Archaeological Investigation of CA-MEN-320/643 Covelo District, Mendocino National Forest. Manuscript on file Heritage Resources Mendocino National Forest, Willows, CA.

Huberland, Amy

1988 Estel Ridge Archaeological Project. On file Mendocino National Forest, Willows, CA.

1993 Archaeological Investigations at CA-Men-935 Beaver Glade Station Mendocino National Forest. On file Mendocino National Forest, Willows Ca.

Keter, Thomas S.

1992 The Effects of Historic Land-use Activities on the Streams and Aquatic Resources of the North Fork of the Eel River. Paper Presented to the Society for California Archaeology, Pasadena, California.

1993 *Territorial and Social Relationships of the Inland Southern Athabascans: Some New Perspectives*. In There Grows a Green Tree Papers in Honor of David A. Fredrickson. Center for Archaeological Research Publication 11. Davis.

1994 The Ranching Period in the North Fork of the Eel River Basin 1865-1905. Paper presented to the Society for California Archaeology, Ventura, CA. pdf at: www.SolarArch.org

1995 Environmental History and Cultural Ecology of the North Fork of the Eel River Basin, California. Heritage Resources Program, Forest Service Pacific Southwest Region. Publication R5-EM-TP-002 September 1995. . [book] pdf at: www.SolarArch.org

1996 Revisiting Pitch Wailaki Villages Recorded by Pliny Goddard in 1922. Paper presented to the Society for California Archaeology, Chico, CA. [Not posted on the website due to site sensitive information.]

1997b An Environmental and Cultural History of the Eel River Watershed. Six Rivers National Forest Eel River Basin Watershed Assessment. On File Six Rivers National Forest, Eureka. [Includes the Van Duzen watershed.] pdf at: www.SolarArch.org

2009 All Those Things that You're Liable to Read in the Ethnographic Literature They Ain't Necessarily So. Paper presented to the Society for California Archaeology, Modesto. pdf at: www.SolarArch.org

2017 Protohistoric and Historic Native American Sites Within the North Fork Eel River Watershed, Trinity County, California. Paper Presented to The Society for California Archaeology, Fish Camp, California. March 11, 2017 pdf at: www.SolarArch.org

Keter, Thomas S. and Michael Griffin

1996b Boundary Dynamics in the Interior North Coast Ranges: A View from the North Fork Eel River Region. (Second author Michael Griffin). Paper presented to the Society for California Archaeology. Bakersfield, April 4, 1996.

Keter, Thomas S. and Kathy Heffner McClellan

1991 Territorial and Social Relationships of the Inland Southern Athabascans: A New Perspective. Paper presented to the Society for California Archaeology Sacramento, CA. pdf at: www.SolarArch.org

Kroeber, A. L.

1925 Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78. Washington.

Jackson, Thomas L.

1976 Middle Eel Planning Unit Archaeological Survey. Report on file, USDA Forest Service, Mendocino National Forest, Willows, CA.

Jones, Terry L. and Kathryn A. Klar

2007 California Prehistory: Colonization, Culture, and Complexity. Altamira Press, London, New York.

Moratto, Michael J.

1984 California Archaeology. Academic Press, Orlando, Fl.

Nilsson, Elena and Russell Bevill

1994 Archaeological Test Excavations at CA-TRI-1297. Jones Ridge, Trinity County California. Dames and Moore Chico California. On File Six Rivers National Forest, Eureka, CA.

Parker, John

2008 Archaeological Monitoring of EPA Mine Waste Removal at the Elem Indian Colony Archaeological Sites CA-LAK-76, 82, 2044. On file BLM, Sacramento. pdf:https://www.academia.edu/4864408/Elem_Indian_Colony_Archaeological_Monitoring_of_EPA_Mine_Waste_Removal?email_work_card=view-paper

Ritchie, J. C.

1886 Climate Change and Vegetation Response. *Vegetatio* 67:65-74.

Rosenthal, Jeffrey and Richard T. Fitzgerald
2002 The Paleo-Archaic Transition in Western California. Texas A&M University Press.
pdf: file:///C:/Users/TEST/Downloads/ThePaleo-ArchaicTransition.pdf

Simons, Dwight D.
1983 Holocene Environmental Changes. In Archaeological Investigations on Pilot Ridge Six Rivers National Forest. Six Rivers National Forest, Eureka.

1986 Site Catchment Analysis. In Archaeological Data Recovery at CA-MEN-320/643 for the Proposed Black Butte Bridge, Mendocino National Forest. Mendocino National Forest, Willows, Ca.

Waechter, Sharon and Thomas M. Origer
1992 Archaeological Investigations at Pilil (CA-MEN-1793), on the Black Butte River, Mendocino National Forest. Report on file Mendocino National Forest, Willows, CA.

Whistler, Kenneth
1979 Linguistic Prehistory of the Northwest California Coastal Area. In A Study of Cultural Resources in Redwood National Park, Polly McW. Bickel. MS. On file Redwood National Park, Arcata.

White, Greg, and D. A. Fredrickson, L D. Hager, J. Meyer, et al
2002 Cultural Change and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Marsh Project. Archaeological Research at Davis Publication 13. University of California Davis.

Wylie, Henry (Jerry)
1976 Pilot Ridge survey: A graphic summary of Borax Lake points and other Materials from the Six Rivers National Forest. Paper presented to the Society for California Archaeology, San Diego.

Manuscripts/Collections

Trinity County Compendium (TCC), n.d.: Keter North Fork Eel River Historical Documents Collection. On file Trinity County Historical Society Weaverville, CA.
Much of this data can be found on my website: www.SolarArch.org

Map 3-2 Adapted from:
The Main Tributaries and Watersheds of the Eel River. Sub Basins Eel River, Cal Water.
In: Major Eel River sub-basins and Wiyot Tribe Ancestral Territory.
https://www.researchgate.net/figure/Major-Eel-River-sub-basins-and-Wiyot-Tribe-Ancestral-Territory_fig1_281444359

General References

King Jerome H., William R. Hildebrandt, Sharon A. Waechter
2016 Cultural Resources Overview Northwest California. Bureau of Land Management. Redding and Arcata offices.
https://www.blm.gov/sites/default/files/documents/files/North_West_Cultural_Resources_Overview_508-small.pdf

Maps and Diagrams

Allen Denoyer, Preservation Archaeologist and Ancient Technologies Expert.
Link to website:
https://www.archaeologysouthwest.org/2021/02/08/whats-the-point-all-about-clovis-points/

Erlandson, Jon M. and Todd J. Braje
2008 Five Crescents from Cardwell: Context and Chronology of Chipped Stone Crescents at CA-SMI-679, San Miguel Island, California. Pacific Coast Archaeological Society Quarterly Volume 40: No. 1.
PDF: https://www.californiaprehistory.com/assets/documents/PagesfromV40N1-4.pdf