California Department of Parks and Recreation
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NUMBER 30

PUBLICATIONS IN CULTURAL HERITAGE

ARCHAEOLOGY, ETHNOGRAPHY, AND TOLOWA HERITAGE at Red Elderberry Place, *Chvn-su'lh-dvn*, Jedediah Smith Redwoods State Park

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AT RED ELDERBERRY PLACE, *CHVN-SU'LH-DVN*, JEDEDIAH SMITH REDWOODS STATE PARK

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PUBLICATIONS IN CULTURAL HERITAGE
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Series Editor
Christopher Corey
Editorial Advisor
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Archaeology, Ethnography, and Tolowa Heritage at Red Elderberry Place, Chvn-su'lh-dvn, Jedediah Smith Redwoods State Park

By Shannon Tushingham
Editor, Richard Fitzgerald; Series Editor, Christopher Corey

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Cover Images:

Front: Tolowa Dugout Canoe on the Smith River, date unknown (Del Norte County Historical Society).
Back: Red Elderberry Sweathouse drawing by Rusty Van Rossman. Floor plan based on House 4 sweathouse, other features based on ethnographic descriptions and information from Tolowa Consultants.

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Dedication

To the past, present, and future generations
of the Taa-laa-wa Dee-ni' (Tolowa).

Courtesy of the Phoebe A. Hearst Museum of Anthropology and the Regents of the University of California — Pliny E. Goddard (15-3318).
Mary Grimes, Clara La Fountain, Lizzie Grimes, and Bertha Stewart
at *Yontocket* Village, 1903.

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Courtesy of the Coos Historical and Maritime Museum Image 007-10.5.
Ephraim Cannon Catching and Mary Moore Catching

PREFACE

Tucked away in the extreme northwestern corner of California lies a land of stunning beauty composed of a craggy coastline, deep forests, and roughhewn mountains. At its heart flows the Smith River, one of the last undammed rivers in California. Arising from its headwaters in the Klamath Mountains and emptying into the ocean some ten miles north of Crescent City, the sinuous aquamarine-colored Smith River is the ancestral home of the Tolowa people. This volume, Number 30 in our series of *Publications in Cultural Heritage*, is about the Tolowa, their deep past, their more recent history, and their rich cultural heritage as viewed from a single locality within Jedediah Smith Redwoods State Park named *Chvn-su'lh-dvn (TcuncuLtun)*, or Red Elderberry Place. Presented within is a unique blend of rigorous archaeological investigation, local history, and ethnography. This volume is the result of three years' worth of research conducted by California State Parks, National Park Service, University of California, Davis, private cultural resource management firms, and local historical societies in cooperation with the Elk Valley and Smith River Rancherias and the general Tolowa community. The unique and ongoing partnership between all these parties has led to the discovery and documentation of an extremely long occupational history spanning about 8,500 years. Among other discoveries, this project has revealed the earliest plank houses, the only semi-subterranean sweathouse recorded to date in northwestern California, and the earliest evidence of tobacco smoking on the Pacific Northwest Coast.

The Tolowa, along with their neighbors the Yurok, Hupa, and the Karuk, were all considered by Alfred Kroeber to be a southern extension of the great and distinctive cultures of the "Pacific Northwest;" yet the Tolowa were quite different with smaller houses and households, an extremely autonomous, even anarchistic political organization, and individual property ownership rather than corporate rights more typical of the northern people. These traits, combined with the importance of acorns in their diet and the use of formal sweathouses, make the Tolowa distinctly Californian despite their outward similarities to the cultures of the North Pacific coast. Lastly, and most importantly, this report gives testimony to the durability and resiliency of traditional cultures despite the overwhelming and often destructive tendencies of early western Euro-American culture.

Richard Fitzgerald
Editorial Advisor

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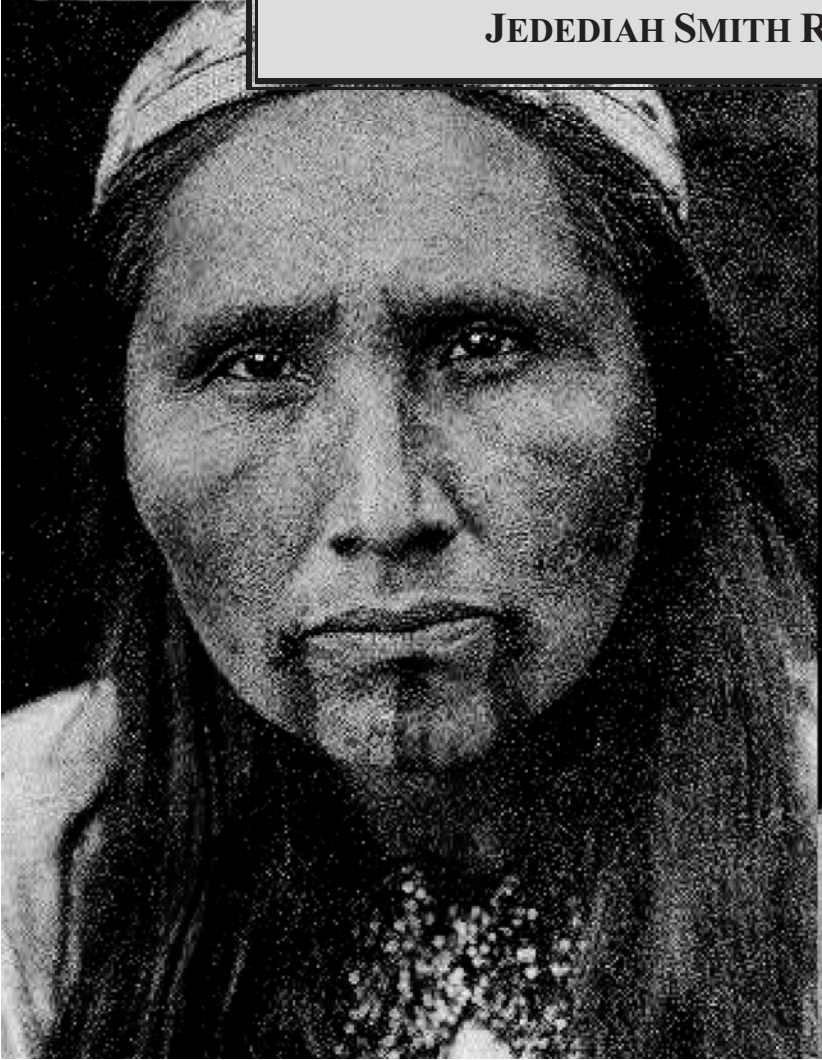
Finally I would like to thank my family for their constant support, in particular my husband Miles and my children, Harrison and Greer, who have enthusiastically accompanied me on countless trips to the Redwoods since they were both very young.

Shannon Tushingham
Author

Archaeology, Ethnology, and Tolowa Heritage at Red Elderberry Place, *Chvn-su'lh-dvn*, Jedediah Smith Redwoods State Park



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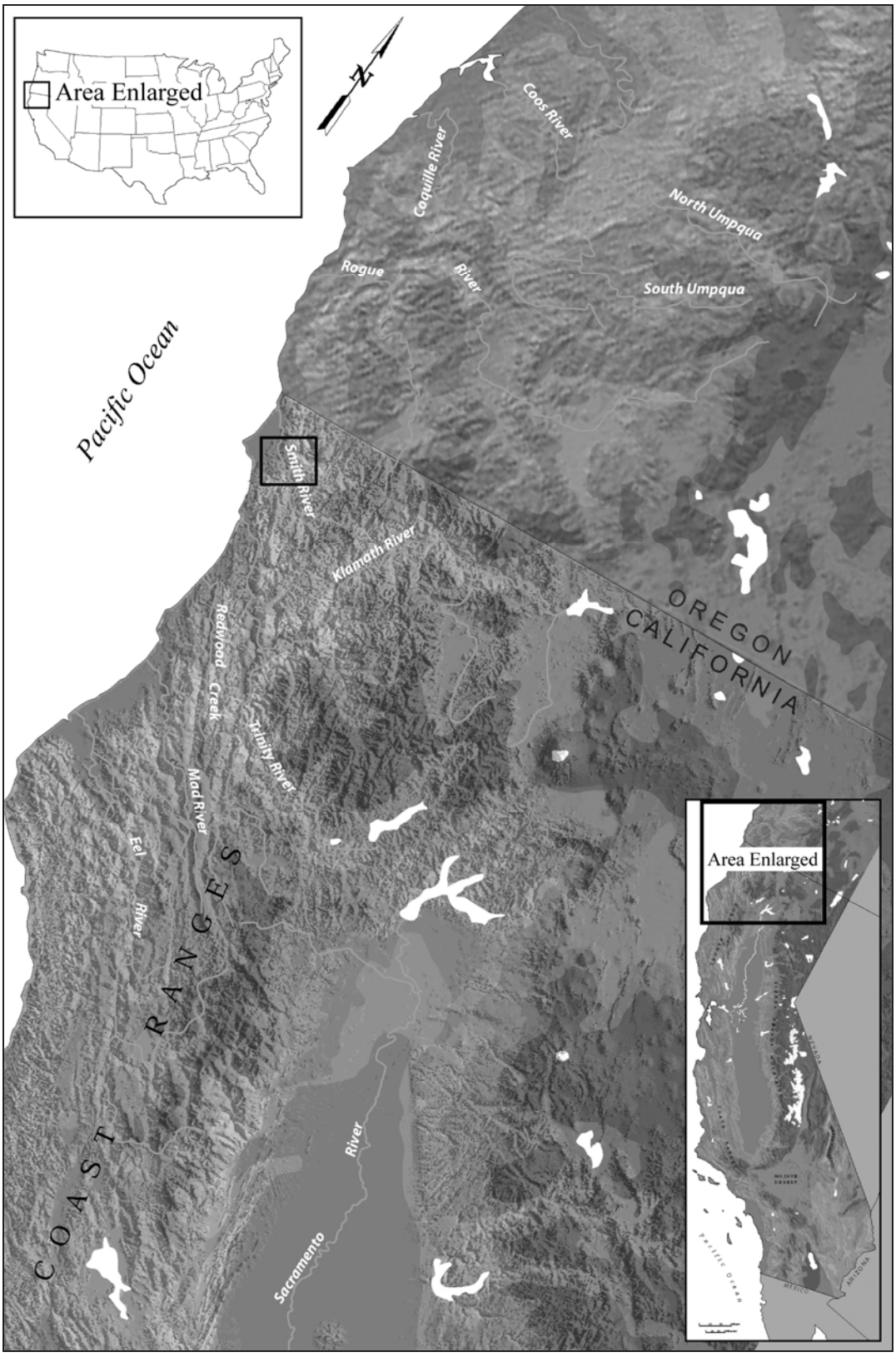
Chapter 1: Introduction

Jedediah Smith Redwood State Park is famous for its wealth of natural resources, in particular for its ancient stands of old growth coast redwood—the tallest of the tall trees—and for the salmon-rich Smith River, which happens to be the last major free flowing river in California. Lesser known, but just as impressive and significant, are the Park's cultural and archaeological resources.

This monograph provides an overview of these cultural resources, which were documented by research designed to better understand the human history of the Smith River Basin, the ancestral and current home of the Tolowa people. The studies draw on a number of sources: archaeological fieldwork, including three UC Davis archaeological field schools and a project with Far Western Anthropological Research Group, Inc.; archival research; ethnographic studies; and oral histories with Tolowa community members. The research is conducted in an ongoing partnership between the Elk Valley Rancheria, the Smith River Rancheria, Redwood National and State Parks, and UC Davis.

When this work began, very little was known about the cultural resources in the campground and adjacent areas. As the area is covered in thick forest duff, it is easy to overlook these sites. Only a small portion of one site was previously recorded—the ethnographic village of *Chvn-su'lh-dvn (TcuncuLtun)*, Athabascan for Red Elderberry Place (CA-DNO-26; Figure 1). Controlled auger testing led to the discovery of the additional five sites detailed here. Site excavations revealed an extremely long chronological sequence spanning from about 8,500 years ago to the Contact Period (1850-1902), the earliest plank houses, the only semi-subterranean sweathouse yet recorded in northwestern California, and the earliest evidence of tobacco smoking in the Pacific Northwest Coast.

In the last chapter of this monograph, a summary of some of the major scientific research issues are addressed. The intent of this research (Tushingham 2009) was formed by two questions: how did intensive foraging systems and the Pacific Northwest pattern develop in the region (abruptly or gradually?), and when were the two most important dietary staples of ethnographic groups (salmon and acorns) intensified? As the first large-scale effort at any interior river site in northwestern California, the answers to these questions were uncertain at the outset, but became quite clear upon investigation. The research has also helped to better understand the use of exotic obsidian in the region. The astonishing amount of obsidian recovered



Created by Larry Chiea (Tushingham 2009).

Figure 1. Study Location Map.

at the project sites—obtained from distant sources (250-350 kilometers)—was unexpected; obsidian hydration and sourcing studies on these samples have now clarified long-term diachronic trends in obsidian use.

Archaeologists in the region have traditionally drawn heavily on the ethnography, and this study is no exception. An effort, however, is also made to address gaps in the ethnographic literature, put the research in historical perspective, and understand Native American persistence and survival themes relevant to Tolowa heritage in the present day. Archival research and ethnographic interviews conducted with Tolowa consultants document previously unknown details about aboriginal land use of the Smith River Basin, and this puts archaeological findings into perspective in new ways. As most ethnographic research in Tolowa country has focused on groups who lived on the coast, this collaborative work has improved our baseline understanding of Upriver, or Ge-Deeni', Tolowa lifeways.

Collaborative research with the Tolowa community also provided invaluable historical context, particularly for the Contact Period (1850-1902). The discovery of a semi-subterranean sweathouse dating to the mid to late 1850s was unexpected; research with Tolowa participants—many of whom are direct descendants of massacre survivors—provided a better understanding of the circumstances faced by house inhabitants and completely shifted the interpretation of the house and associated assemblage. Research issues related to Native American survival, persistence, and continuity emerged from many conversations with Tolowa colleagues during and after archaeological documentation of the house. In short, the archaeological findings associated with the Contact Period sweathouse, combined with historical evidence and community knowledge, demonstrate a remarkable degree of persistence of traditional lifeways despite extreme population decline and displacement from massacres, disease, forced removals, and a disintegrating traditional economy. Furthermore, oral histories and archival research suggest that the area now known as Jedediah Smith Redwood State Park and Hiouchi Flat served as an inland sanctuary from the violence and upheaval associated with settler communities concentrated on the coast, and became the home for large Indian-white households who lived alongside the last permanent inhabitants of Red Elderberry Place. Even after the terminal occupation of Red Elderberry Place—associated with the murder of its last inhabitant in 1902 by local white settlers—these Indian-white households persisted, and this very special place continues to be of major importance to the Tolowa community to this very day.

Chapter 2: Project Context

The project area encompasses Jedediah Smith Campground and Hiouchi Flat in lands co-managed by the California Department of Parks and Recreation (North Coast Redwood District) and the National Park Service (NPS). It is located approximately nine miles from the coast along the Smith River, within an impressive old growth redwood forest. Although much of the forest forms a dense canopy, open prairies are sporadically scattered throughout the area. The project area, and much of what is now Del Norte County, lies within the ancestral territory of the Tolowa people.

ENVIRONMENTAL CONTEXT

This section summarizes important features of the present-day and historical environment of northwestern California, the goal of which is to develop a context for understanding human-ecological relationships and the structure of the archaeological record within this landscape. Included are brief descriptions of the various environmental zones present in the study area, with a focus on the Smith River-Redwood Belt zone, the location of the archaeological sites described in this monograph.

Northwestern California is a mountainous region with elongated ranges and valleys that trend in a northwesterly direction. Annual rainfall is high, creating numerous salmon-bearing streams that were of major economic importance to local Native American people. The combination of high rainfall and topographic diversity created a complex mosaic of vegetation consisting largely of coniferous forest, open prairies, and mixed hardwood forest. These habitats yielded a variety of important subsistence resources, including Roosevelt elk (*Cervus canadensis roosevelti*) and black-tailed deer (*Odocoileus columbianus*), anadromous fish, and tan bark oak (*Lithocarpus densiflorus*) acorns, which are the most nutritious of all acorn varieties in California (Baumhoff 1978).

Archaeologists have traditionally reduced environmental patchiness to four major ecological zones: (1) the coast, offshore rocks, and adjacent beaches; (2) estuaries, including river mouths, coastal lakes, and lagoons; (3) rivers (which flow through the Redwood Belt and Oak-Woodland sub-regions); and (4) the mountainous interior uplands (Table 1).

While the overall region provided abundant and varied edible plant and animal species, each ecological zone is associated with specific taxa, and the related subsistence activities (e.g., shellfish gathering, salmon fishing,

hunting, acorn gathering) would have been emphasized during certain times in the seasonal round, and at certain times in history.

The sites studied here are located along the Smith River in the Redwood Belt, a distinct environmental zone particularly rich in anadromous fish and terrestrial resources. Resources associated with the coast, estuaries, and oak woodlands could be accessed within a one-day walk or canoe ride.

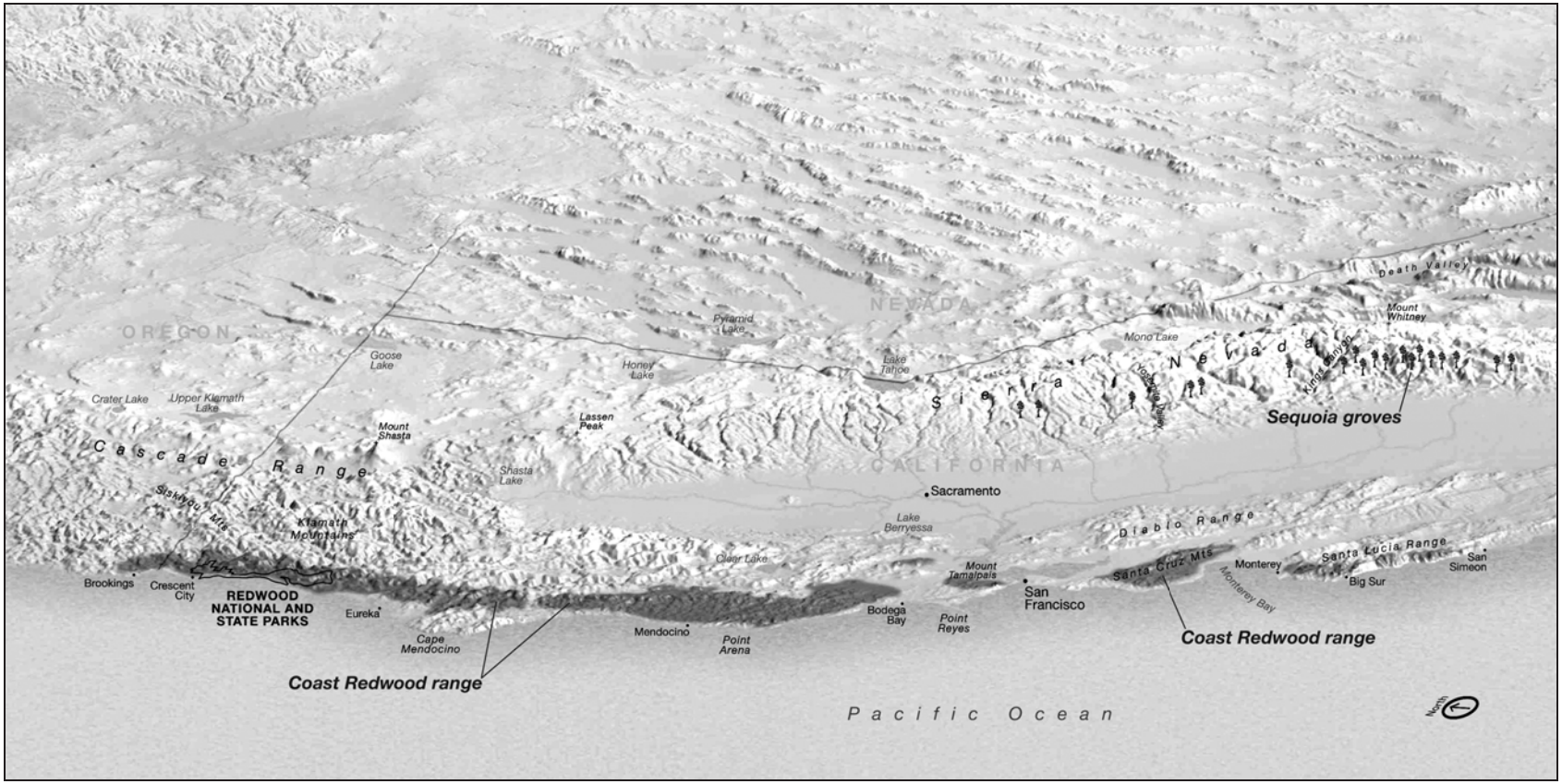
Table 1. Major Ecological Zones in Northwestern California and their Attributes.

Environmental Zone	Description	Climate	Dominant Vegetation Communities	Major Subsistence Related Taxa
Coast	Beach and rocky shore along Pacific Coast	Mediterranean; coastal rainforest	Coastal scrub and grasses; low elevation forest (redwood)	Sea mammals Surf fish Shellfish Pelagic fish
Estuary	Brackish water river mouths, remnant coastal lakes and lagoons	Mediterranean; coastal rainforest	Coastal scrub and grasses; low elevation forest (redwood)	Sea mammals Waterfowl Aadromous fish Camas
River: Redwood Belt	Section within north-south strip of redwood forest	Mediterranean; coastal rainforest	Low elevation forest (redwood, Douglas fir, tan oak)	Anadromous fish Acorns, berries
River: Oak-Woodlands	River section within Oak-Woodland forest east of Redwood Belt	Continental; more temperature extremes	Montane forests (tan oak, Oregon oak, madrone)	Anadromous fish Acorns, berries Elk, deer
Uplands	Non-riverine Klamath mountains	Continental; more temperature extremes; winter snow above 1,200 meters	Montane and subalpine forests (tan oak, Oregon oak, madrone)	Acorns, berries Elk, deer Roots and shoots

Redwood Forest

Along the north coast, a narrow (20-60-kilometer) strip of redwood forest is present from southwest Oregon to Monterey County (Figure 2). Redwood forest is an extremely tall, dense, needle-leaved forest dominated by coast redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), and tan oak (*Lithocarpus densiflorus*) on upper slopes. The forest is limited to areas along the coast and lower river valleys where maritime climatic conditions prevail. To the east, coast redwood is limited by the underlying bedrock of the Klamath Mountain ultramafics. The redwood forest north of the Eel River watershed is very similar to northern temperate rainforests of the Olympic peninsula in Washington state. Steep slopes, thin soils, and summertime winds sweeping over the King Range have caused a large gap in the forest south of the Eel River where mixed evergreen forests predominate. South of this gap the redwood forest is significantly different. Here coast redwood mixes with Pacific madrone (*Arbutus menziesii*), tan oak, Douglas fir, and bay laurel (*Umbellularia californica*).

Redwood predominates on lower slopes and stream terraces, where they tend to mix with western hemlock (*Tsuga heterophylla*) and Sitka spruce (*Picea sitchensis*) on alluvial flats. Old growth redwood forest stands can be quite dense, with little sunlight reaching below forest canopies. Undergrowth is low, dominated by forbs, berries, small bushes, and trees. Understory taxa includes salal (*Gaultheria shallon*), coast rhododendron (*Rhododendron*



From the National Park Service.

Figure 2. Present-day Range of Redwood (*Sequoia sempervirens*) Forest in North America.

macrophyllum), thimbleberry (*Rubus parviflorus*), poison oak (*Toxicodendron diversilobum*), and huckleberry (*Vaccinium parvifolium*). In some areas the ground is covered with ferns, especially the western sword fern (*Polystichum munitum*; Sawyer 2007:279-280).

Topographic diversity and dramatic elevation changes characterize the geology of the study area. Elevations range from sea level on the coast to 6,411 feet at Bear Mountain. The highest elevations are found on the eastern edge of the Smith River watershed in the rugged Klamath Mountains.

The Coast and Estuary

The coastal strip and estuary are situated on an ancient sand dune complex with a complex geological history. Tectonic uplift, seismic activity, sea-level rise, fluvial deposition, and sediment or eolian erosion has resulted in the creation of a varied landscape which, over time, has produced several different ecological communities or micro-environments, including extensive wetlands habitats (including lakes, ponds, sloughs, and marshes), ocean beaches, river, open and vegetated sand dunes, and wooded ridges (CA State Parks 2001).

At the end of the Pleistocene (about 10,000 years ago), Lake Earl is believed to have been the former mouth of the Smith River. In the more recent past, the Smith River flowed south along *Yontocket* slough when inundated, spilling into Lakes Earl and Tolowa (or Lake Talawa), which naturally breeched into the Pacific Ocean. Currently, breaching is facilitated by moving the sand dune barrier between the Pacific Ocean and Lake Tolowa using mechanical equipment. Numerous creeks, springs, and seeps run into Lakes Earl and Tolowa, which are linked by a narrow channel. The Lakes form an estuarine or coastal lagoon system, and water salinity can be quite high, particularly in locations close to the coast and at times when the lake is breached.

This landscape supports a wide variety of flora and fauna. Fish species include an array of surf, rocky-shore, estuarine, pelagic, and fresh-water fish species. The fishery includes salmon and steelhead in the Smith River estuary, cutthroat trout in Lake Earl, and bass and crappie in Dead Lake. A diverse number of shellfish species is available on the beach, rocky coast, and estuarine settings. Lakes Earl and Tolowa are a stopover on the Pacific flyway for thousands of migrating waterfowl. Birds include the peregrine falcon (*Falco peregrinus*), mud hens or American coots (*Fulica americana*), the Canada Aleutian goose (*Branta canadensis leucopareia*), and many other species of ducks, geese, and swans. Marine mammals include California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*), harbor seal (*Phoca vitulina*), sea otter (*Enhydra lutris*), and gray whales (*Eschrichtius robustus*), the latter of which migrate from the Arctic to Baja California in the summer months. Offshore rocks support major Steller sea lion (*Eumetopias jubatus*) breeding grounds. Terrestrial fauna consist of Roosevelt elk, deer, coyotes (*Canis latrans*), rabbit (*Sylvilagus* sp.), raccoons (*Procyon lotor*), rodents, and reptiles.

The Smith River Watershed

The Smith River is a relatively short watershed, extending approximately 32 air miles inland from the Pacific Coast. Mean annual runoff, concentrated in winters, is approximately 82 inches per year, though this figure can be significantly higher in flood years which tend to occur on a cyclical basis (Barston 2007). The head of the Smith River is

located in the rugged Siskiyou mountains, flowing first through the Oak Woodland mixed hardwood zone and Klamath mountains, then west through an approximately ten-mile-wide Redwood Belt, and finally through a four-mile-wide flat coastal strip where it meanders for approximately eight miles before emptying into the Pacific Ocean.

The watershed takes on different characteristics in each of these zones. The watershed is extremely steep and divided, particularly in the eastern mountains. Overall, more than 40% of the Smith River drainage has slopes over 50% (Table 2),

In the Oak Woodland Zone, where the terrain is quite rugged and mountainous, there are few flats and the Smith and its tributaries are quite narrow. The River widens and becomes less volatile in the less mountainous Redwood Belt, where there are more gravel bars and riffles. Finally, in the flat coastal strip, the river is characteristically wide and meandering and, as a result, has produced an extensive wetlands habitat (including a number of number of sloughs, marshes, remnant lakes, and ponds).

Table 2. Area of the Smith River Watershed in General Slope Classes.

PERCENT SLOPE	PERCENT OF DRAINAGE
0-50%	59.7%
51-70%	28.2%
Over 70%	12.1%

Notes: Data from California Department of Fish and Game (1980:Table 12), cited in Barston (2007).

The Smith River-Redwood Belt

The archaeological sites described in this report are located in the Smith River-Redwood Belt, a distinct ecological zone within the study area with a particularly rich anadromous fish resource base (Figure 3). The sites are situated along terraces above the Smith River at elevations of about 50 meters above sea level.

This zone encompasses a section of the Smith River which flows through the narrow north-south trending belt of Redwood forest, extending from west-central California to southwestern Oregon (see Figure 2). In addition to old growth and secondary growth Redwood, the Smith River-Redwood zone supports Douglas fir, tan oak, western hemlock, and Western red cedar. Western red cedars are much larger and more numerous in the northern Pacific Northwest, and they were the primary house building and woodworking source used by northern Pacific Northwest ethnographic groups, while Redwood trees were used in similar ways by northwestern California Native Americans.

Within the Smith River-Redwood Belt, the most important subsistence-related taxa were anadromous fish (especially chinook, coho, and steelhead salmon), acorns, Roosevelt elk, and deer. Other terrestrial fauna include coyotes, rabbit, raccoons, rodents, brown bears, and mountain lions. Birds include the peregrine falcon, and many species of ducks, and geese. The Smith River provided an important corridor through the Redwood belt, which is essentially a resource-poor "food desert" in non-riverine forested areas.

View towards the east.

Figure 3. Study Area: The Smith River-Redwood Forest Environmental Zone at Jedediah Smith State Park.

The Smith River Salmon Fishery

Anadromous fish were a primary staple of northwest California native groups. A wide variety of fishing methods and implements were used, from simple harpoons to communal weirs. However, most fishing was conducted by individuals and small households, while community-level pursuits (i.e., weirs) were relatively uncommon.

There is a great deal of fish species variability in river watersheds which is largely linked to season and location within the watershed. Above river mouths most species are anadromous, which historically were available during much of the year (Table 3), though fall runs were the most productive. Important species include king or chinook salmon (*Oncorhynchus tshawytscha*), silver or coho salmon (*O. kisutch*), chum salmon (*O. keta*), steelhead (*O. mykiss*), cutthroat trout (*O. clarki*), Pacific lamprey (*Entosphenus tridentatus*), white sturgeon (*Acipenser transmontanus*), and eulachon or candlefish (*Thaleichthys pacificus*). All northwest California streams had fall-run king salmon, silver salmon, and steelhead trout, though only the Smith, Klamath, and Trinity Rivers had a spring run of king salmon as well (Baumhoff 1963:174).

Steelhead are the most abundant species, and due to their jumping and swimming abilities, are found in higher streams and tributaries than other anadromous species. Chinook salmon, found on main streams and larger tributaries, are the largest fish in terms of body size and are also the fattest, particularly in lower water courses early in their spawning cycles. Coho are less agile than other anadromous fish and are found only on low gradient

tributaries. Less important species include Chum, which are small and have highly variable runs, and Coastal Cutthroat, which are present for many months of the year but are only available in estuaries (Barston 1997, 2007).

Table 3. Upstream Migration Timing of Select Anadromous Salmonids in the Smith River Watershed.

Species	Stock	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook	Fall Runs*	■	■							■	■	■	■
	Spring Run				■	■	■						
Coho	Yearling Smolt	■										■	■
Chum													■
Steelhead	Winter Run	■	■	■								■	■
	"Blue Backs"			■	■								
	Spring Run				■	■							
Cutthroat						■	■	■	■	■	■	■	

Notes: * In three distinct pulses representing three genetically distinct "races" of Chinook. (from Barston 2007:75).

Climate

Regional climate is characterized by cool wet winters and mild dry summers. In general, climatic variation is linked to distance from the coast and elevation. The coast and lower elevations are characterized by a mild Mediterranean pattern, while interior upland areas have a more variable montane oceanic climate. Ninety percent of annual rainfall is concentrated from the months of October to April, with annual averages of 65 inches on the coast, to 94 inches at Gasquet, to more than 150 inches in the high elevation settings of Ship Mountain and Bear Basin (Barston 2007; Winston and Goodridge 1980). In the winter, rainfall turns to snow above 4,000 feet. Fog keeps temperatures cool in the mornings, particularly in the summer along the coast. On the coast the average summer high is 66 ºF, while the winter high averages 55 ºF. Interior settings are more extreme, with summer highs 10 to 20 degrees hotter and winter highs averaging 5 to 15 degrees colder than the coast.

Paleoenvironment

Temporal variation in climate was often dramatic, and is tied to the distribution and composition of plant and animal communities, fire regimes, and sea surface temperature. Geomorphic landscapes also evolved through time. Tectonic activity, coastal subsidence, fluvial deposition, and flooding are processes that can form or erase landforms; in many cases such dynamics have had profound effects on archaeological site preservation (e.g., Fitzgerald and Ozaki 1994; Minor and Grant 1996).

Through time, vegetation communities may change composition, expanding or contracting along elevation gradients in response to major climatic shifts, though local fine-grained analyses indicate that these dynamics are quite complex and can vary considerably from region to region. Offshore sediment cores (Barron et al. 2003; Heusser et al. 2000)

provide a record of how coastal conditions and coastal forests changed through time via a series of maritime climate proxies (diatoms, alkenones, pollen, CaCo3%, and total organic carbon). Terrestrial vegetation composition and climatic conditions have been reconstructed through sedimentary pollen and charcoal sequences taken from montane lake cores at Bolan Lake in the Siskiyou Mountains (Briles et al. 2005), Bluff Lake and Mumbo Lake in the eastern Klamaths (Daniels et al. 2005; Mohr et al. 2000), Twin Lakes in the southern Siskiyous (Wanket 2002), and 13 lakes and other localities in the North Coast Ranges and adjacent areas (summarized in West 1993).

Late Pleistocene (21,000-11,600 cal BP)

The Late Pleistocene begins with the period of maximum extent of glacial ice sheets, known as the Last Glacial Maximum (or LGM; 21,000-18,000 cal BP). Mean temperatures during the LGM were approximately 5.8 ± 1.4 degrees Celsius cooler than today (Schneider von Deimling et al. 2006). The Klamath Mountains were covered with ice sheets at high elevations, extending down some river valleys to as low as 1,020 meters above mean sea level (Sharp 1960). Sea levels were approximately 120 meters below their present-day levels, and ancient coastlines were located significantly further west, by about 30 kilometers. Modern estuaries had not yet formed, as rivers continued farther west along the continental shelf before emptying into the Pacific Ocean.

A gradual warming trend begins after the LGM. Deglaciation caused ocean levels to rise as much as 80 meters between 14,000 and 7000 cal BP. Wetter and warmer conditions are related to the transitioning of inland montane forests from subalpine parkland species typical of colder and dryer conditions (including sagebrush, pine, spruce, cedar, and mountain hemlock), to pine and fir forests (with oaks expanding in some areas) between 15,000 and 11,000 cal BP (Briles et al. 2005). With river systems bearing high amounts of runoff, a great deal of coarse sediment, including cobbles and boulders, was carried into lower drainage basins, and torrential flows likely "triggered catastrophic landslides and debris flows in the region," blocking river channels for brief periods of time (Meyer 2008; Stone and Vassey 1968). Extensive erosion of the uplands triggered the formation of depositional landforms at low elevations, including floodplains, river terraces, debris fans, and the expansion of estuarine habitats, well into the Holocene (Meyer 2008).

The post-LGM warming trend, however, underwent a series of oscillations, one of which is known as the Younger Dryas (12,800-11,600 cal BP), when conditions abruptly returned to cold and dry glacial climatic conditions. In the North Coast Ranges, oaks had been increasing their range and number since the LGM, but during the Younger Dryas, the trend was briefly reversed, with pines increasing at the expense of oaks (West 2001). At Twin Lakes in the Siskiyou Mountains, there are large-scale fire disturbances, and montane and subalpine taxa such as fir and mountain and western hemlock abruptly disappear at 12,000 cal BP, events likely related to the Younger Dryas (Wanket 2002).

Early Holocene (11,600-8200 cal BP)

During the terminal Pleistocene-Early Holocene transition, global climate resumed the warming trend that began after the LGM. Sea surface temperatures measured by alkenones have two high peaks in the beginning of this period (Barron et al. 2003). Pollen sequences document increases in alder, pine, and redwood, and decreases in alder, ferns, and herbs at low elevations—vegetation changes consistent with warming and drying. Overall,

inland forests during the Early Holocene are "composed of remnants of full glacial age open pine woodlands, chaparral, and grasslands with isolates of communities that later developed into present-day associations" (West et al. 2007). Pine, oak, and cypress forest dominate in montane settings between 11,000 and 6000 cal BP (Briles et al. 2005), while North Coast Ranges remain open pine forests with fir (West 1993).

Warm and dry conditions over the course of the Early to Middle Holocene are associated with a reduction in runoff and the ability of streams to transport large coarse sediments. Rivers began to coalesce into singular streams and deepen, as the "pace of channel down-cutting (vertical incision) through outwash deposits" accelerated (Meyer 2008).

Middle Holocene (8200-3200 cal BP)

During the Middle Holocene, continental and maritime conditions are marked by a gradual shift to cooler winters. Sea surface temperatures are one to two degrees Celsius cooler than both the Early and Late Holocene (Barron et al. 2003). The pace of sea-level inundation slows, with sea levels rising only about eight meters total between 7000 and 4000 cal BP, which allowed "sedimentation to keep pace with inundations, and permitted the formation of extensive dunes and tidal marshes along the coastal plain" (Meyer 2008).

In the Klamath Mountains, pines and oaks took over areas where redwood and cedar were once common. In the North Coast Ranges, oak pollen peaks during the mid-Holocene. Oak forests were generally more expansive, being found at higher elevations than today (West 1993; West et al. 2007). Around 5200 cal BP, coastal redwood and alder begin a steady rise, suggesting an increase in effective moisture, and possibly the "development of the North Coastal temperate rainforest" (Barron et al. 2003). Fire frequency peaks at Bolan Lake at 7000 cal BP, while at about 4800 cal BP there is a marked decrease in fire events, possibly associated with open vegetation communities and consequent fuel load reduction (Mohr et al. 2000)

Late Holocene (3200 cal BP-present)

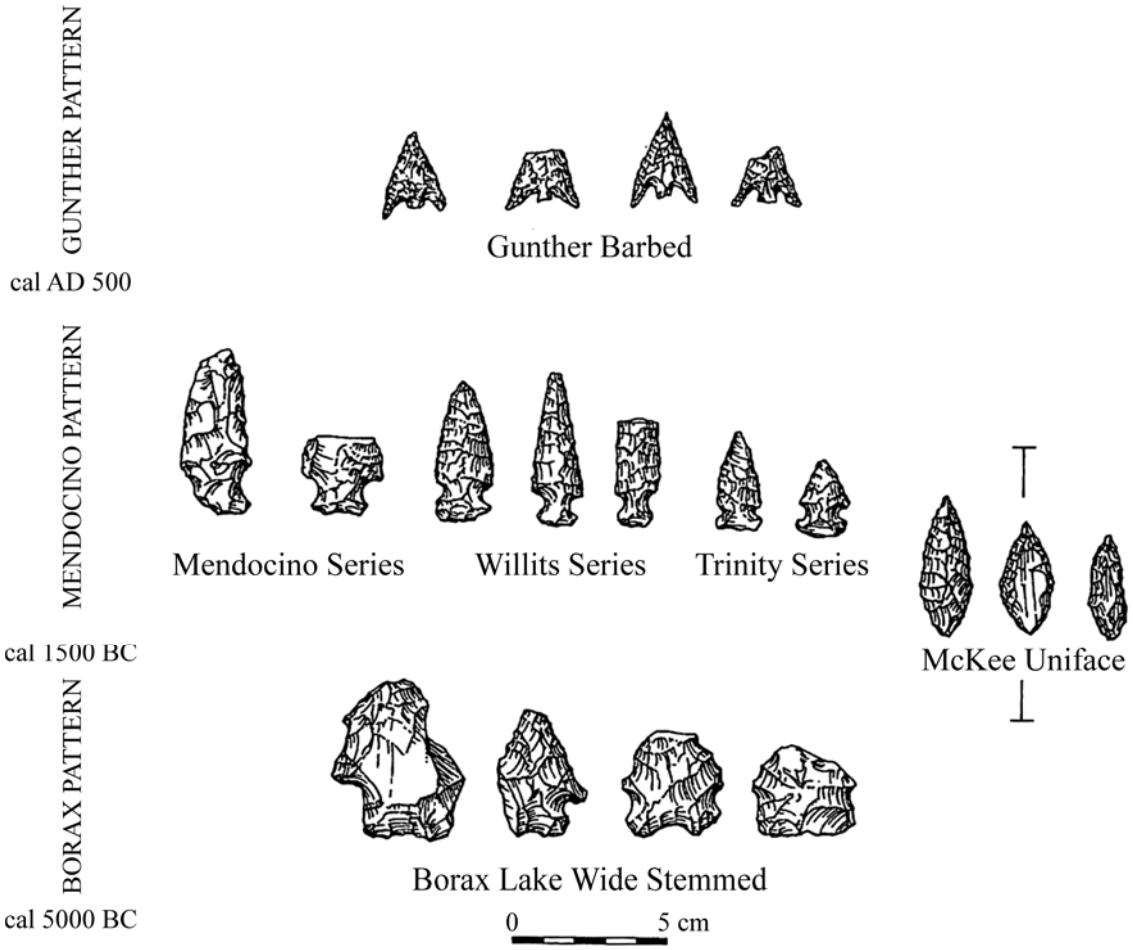
Fall and winter sea surface temperatures began to warm again around 3200 cal BP, eventually stabilizing to modern levels (Barron et al. 2003). By the Late Holocene, vegetation communities have generally reached their modern state. In montane settings, pine and fir dominate, while fir increases around 2,000 years ago (Briles et al. 2005). Alternating changes in the amount of redwood and alder versus pine pollen in coastal forests are indicative of cyclical, rapid changes in effective moisture and seasonal temperature, associated with enhanced El Nino-Southern Oscillation Cycles (Barron et al. 2003).

The Medieval Climatic Anomaly (1300-700 cal BP), also known as the Little Altithermal, is part of a globally recognized climatic anomaly in the Late Holocene, associated with an unusually warmer and/or drier climate. Droughts were common worldwide during this time, and were likely devastating in arid areas. In northwest California, a notable peak in fire frequency occurs at 1000 cal BP, likely associated with drought conditions (Mohr et al. 2000). In coastal forests, redwood and alder decline around 700 cal BP, but recover shortly thereafter (Barron et al. 2003). Overall, climatic changes appear to be part of the climatic cycling characteristic of the Late Holocene. Native burning to increase flora and fauna habitat and quality increased the mosaic-like quality of present-day forests (Anderson 2005).

ARCHAEOLOGICAL CONTEXT

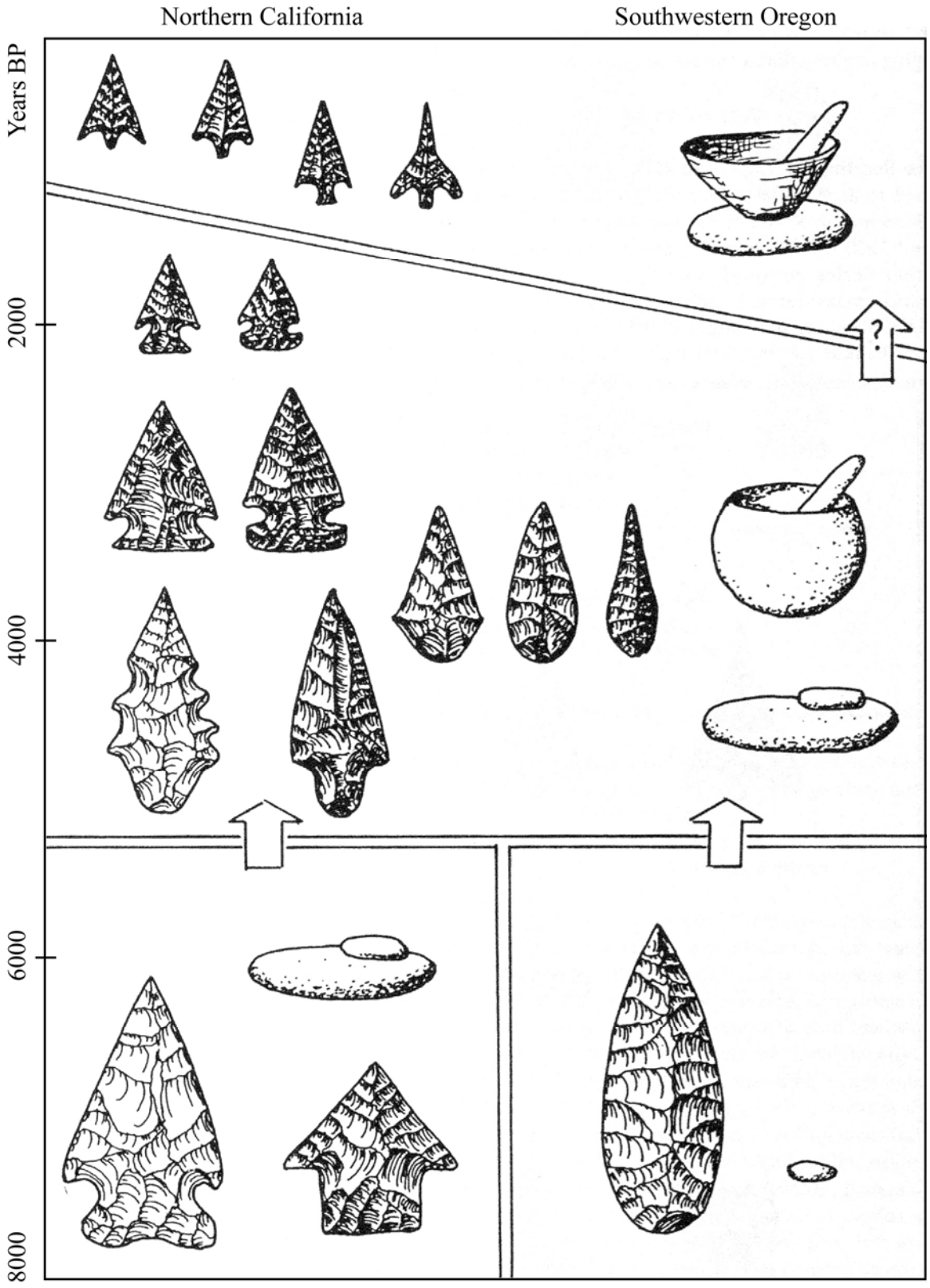
Very little is known about human occupation of northwestern California and southwestern Oregon during the Pleistocene-Holocene transition. After 10,000 cal BP, the record is more well-defined. In northwestern California, temporal units include the Borax Lake Pattern (10,000-4500 cal BP), the Mendocino Pattern (4500-1500 cal BP), and the Gunther Pattern (post-1500 cal BP) (Fredrickson 1984; Hildebrandt 2007; Hildebrandt and Hayes 1993; Hildebrandt and Levulett 2002; Figure 4). The Contact Period as a historical unit commences at 1850-1852, during the Gold Rush of the northwestern mines which marked the first large wave of settlers into the region.

Archaeologists have recognized similar time periods and adaptive modes at sites postdating 5000 cal BP in southwestern Oregon (c.f. Aikens 1993; Clewett and Sundahl 1990; Schreindorfer 1985; Figure 5). Convincing Borax Lake sites have not been found in Oregon. Early sites in southwestern Oregon are part of the Glade Pattern, which begins around 9000 cal BP. Also known as the Cascade Pattern or Marial Phase, the terminal date of the Glade Pattern is the subject of some controversy, but is generally set around 5000 cal BP.



From Hildebrandt and Levulett (1997:306).

Figure 4. Temporally Diagnostic Projectile Points from Northwest California.



From Clewett and Sundahl (1990:43).

Figure 5. Northwest California and Southwest Oregon Chronological Sequences.

Late Pleistocene-Early Holocene (>9000 cal BP)

Debate over the role of coastal migrations in the peopling of the New World has focused on the southern California coast where there is ample evidence of human settlement as early as the late Pleistocene. As an ice-free corridor was likely open along the Pacific coast by 14,000 cal BP (Dixon 2001; Mandryk et al. 2001), exploitation of coastal resources may have been a critical component of early colonization. Well-publicized archaeological discoveries from the Channel Islands dating to the Late Pleistocene (e.g., Erlandson et al. 2011; Jones 1991, 1992; Rick et al. 2001) seems to support the view that coastal environments are highly valuable to hunter-gatherers "since it is expected that colonizing populations are free to choose the most optimal resources available" (Jones 1991:1). Following the assumption that coastal resources rank high and that the coast and estuaries are logically the primary locations which hunter-gatherers would exploit, several scholars have proposed that the antiquity of settlement in northwestern California may be much greater than has been revealed in the archaeological record (Davis et al. 2004; Erlandson et al. 1998; Fitzgerald and Ozaki 1994; Gmoser 1993; Jones 1991, 1992; Minor and Grant 1996; Punke and Davis 2006). Pointing to the region's high resource potential, these researchers contend that early sites have not been discovered due to limited excavation and poor site visibility caused by tectonic subsidence and Holocene sea-level rise. Several researchers predict that more fieldwork in coastal and estuarine settings would produce a vastly different understanding of northwest California prehistory, particularly if guided by geoarchaeological data to determine the location of ancient landscapes.

A contrasting view holds that the existing archaeological record is a fairly accurate reflection of prehistoric events (Hildebrandt 2007; Hildebrandt and Levulett 1997, 2002), pointing to the fact that despite intensive survey of the King Range National Conservation Area, an area minimally impacted by Holocene sea-level rise, no evidence of intensive coastal settlement was found predating 700 cal BP (Levulett 1985; Levulett and Hildebrandt 1987; Waechter 1990). The late coastal settlement of northwestern California is held to be the result of the region's superior terrestrial productivity, which effectively lowered the value of coastal resources. According to these scholars, north coast foragers will focus earlier on interior resources such as salmon and acorns simply because they rank high here—that is, they are more productive than in southern California, which has superior coastal and inferior terrestrial resources. In sun, people did not move to the coast until they are forced to move to new resource patches due to population pressure.

There have been very few sites in the region that predate 9000 BP. As observed by Erlandson et al. 2008:2237), early dating sites in the southern Pacific Northwest Coast are exceedingly rare, with "no well-documented Early Holocene sites along the Washington Coast, only one from the Oregon Coast, and none from the northern California Coast." The most conclusive evidence for early coastal occupation in the region north of Duncan's Point Cave (CA-SON-348/H) in Sonoma County comes from Indian Sands (35CU67), a coastal bluff site in southwest Oregon that produced a radiocarbon date of 10,430 ± 150 (12,300 ± 490 cal BP) at the base of an artifact-bearing level (Davis et al. 2004). Erlandson et al. (2008:2237), however, point out that "no clear evidence has been presented that the dated charcoal was cultural in origin or that the ^{14}C date was not affected by the old wood problem….until further evidence is presented to support the presence of a terminal Pleistocene component, we consider 35CU67C [the Indian Sands site] to be an Early

Holocene site." In any case, early occupation at Indian Sands is likely related to chert quarrying (Davis et al. 2004), in contrast with a later occupation dating to the Late Holocene and is associated with shellfish procurement (Moss and Erlandson 1998).

Other evidence in southwest Oregon predating the Pleistocene-Holocene boundaries includes two fluted projectile points on the Rogue River (Minor 1985) and a Clovis point base recovered during test excavations at the Winchuck site (35CU176) on the mouth of the Winchuck River, just north of the California border, though its association remains unclear (Fagen 1990; Flenniken et al. 1992; Hemphill 1990).

Further south in interior northern California, Post Pattern/Western Pluvial Lakes tradition materials (fluted points and stone crescents) have been recovered at the Borax Lake site (CA-LAK-36) near Clear Lake in Lake County, but datable material that is unmixed with later components has not been found. Other sites at Clear Lake (CA-LAK-510) and Cache Creek (CA-LAK-1581) have produced obsidian with high micron readings, pointing to a Paleo-Indian occupation, but lack diagnostic artifacts and carbon for dating (DeGeorgey 2004; Hildebrandt 2007; White 2002). Isolated fluted points have been found near the coast in Mendocino County at site CA-MEN-1918 (Simons et al. 1985). Two Post Pattern stone eccentrics, possibly bear effigies, have been reported from CA-SON-977 at Laguna de Santa Rosa in Sonoma County (Origer and Fredrickson 1980:21; Moratto 1984:516, Fig. 10.14). A similar crescent has been recovered at an unnamed site near Bodega Head (Moratto 1984:516).

Borax Lake Pattern (8000-5000 cal BP)

Initially defined by Fredrickson (1973, 1974, 1984), the Borax Lake Pattern represents an extremely long, wide-ranging cultural tradition found at sites throughout the North Coast Ranges. The artifact type associated with the Borax Lake Pattern is the Borax Lake Wide-stemmed projectile point, a large dart point with a wide, square stem, which is often indented and basally thinned. Serrated bifaces, ovoid flake tools and edge-flaked tools are common, as are a wide range of domestic tools, such as milling slabs and handstones. Borax Lake sites likely reflect multi-activity base camps, where people employed a relatively mobile subsistence-settlement approach, focusing on a wide range of both plant and animal resources, but placing a minimal emphasis on storage (Hildebrandt 2007; Hildebrandt and Hayes 1983, 1993; Hildebrandt and Levulett 1997).

In the general region, numerous Borax Lake Pattern sites have been located in upland areas on Pilot Ridge and South Fork Mountains (cf. CA-HUM-573 and -367; Hildebrandt and Hayes 1983, 1993) and along the Trinity River near Big Bar (CA-TRI-1008; Sundahl 1992; Sundahl and Henn 1993). The earliest domestic structure discovered in northwestern California dates to 7945 cal BP during Borax Lake times (Fitzgerald and Hildebrandt 2002). The structure, identified in the uplands of Pilot Ridge, included three discrete rock clusters possibly representing post supports around the small remnant of a compact floor and associated milling and chipped stone tools. In contrast to the substantial rectangular plank houses of later time periods, the house was likely circular and was used as a less permanent shelter.

Borax Lake sites have also been found in interior settings along Clear Lake (White 2002) and at CA-MEN-1711, a site in the Mendocino mountains (Huberland 1989). These

southern sites might be older, according to obsidian hydration data, and generally lack milling gear, possibly reflecting "an earlier pre-Archaic hunting focus" (Hildebrandt 2007).

Borax Lake Pattern sites are rare in coastal settings. An important exception is CA-HUM-513/H, located near McKinleyville about 1.5 kilometers from the coast. Preliminary investigations at the site by Roscoe (1995) revealed an artifact assemblage consisting of both flaked and ground stone tools, but no evidence for marine resource use (e.g., no shellfish remains). Due to the widespread prairie and marshland habitats in the area, and the large number of projectile points and butchering tools found, Roscoe (1995) argued that the hunting and processing of large game (predominately Roosevelt elk) was likely a major activity at the site. Borax Lake Widestem points have not been found in southwestern Oregon, with the possible exception of site 35JA53, which is located just over the California border on the Applegate River, approximately 75 miles from the coast (Brauner and Nisbet 1983).

Glade Tradition (9000-5000 cal BP)

The Glade Pattern represents an extremely long tradition in southwestern Oregon that is a regional manifestation of the Northwest Coast-wide Cascade Pattern, which has been well defined at sites from the Columbia River Basin. Connolly (1986, 1988) originally proposed the subdivision to emphasize that Glade artifacts are found much later in the record in southwestern Oregon than in other parts of the Northwest Coast. Assemblages are dominated by leaf-shaped projectile points (foliates) and wide-necked stemmed points. Other characteristic artifacts include stone bowl mortars, hammer/anvil stones, edge-faceted cobbles, and a linear flake technology frequently expressed as "thick-bit" end scrapers. The Tradition is hypothesized to represent a terrestrially oriented subsistence strategy, with sites consisting predominantly of temporary seasonal camps occupied by small groups of highly mobile hunter gatherers (Connolly et al. 1994).

Glade Pattern sites have been excavated mainly on the Rogue and Coquille Rivers. According to Schreindorfer's (1985) work at the well-dated Marial site (35CU86), there appears to be some temporal patterning of Glade Pattern point styles; serrated foliates are more common before 5500 cal BP, foliate points tend to be larger in earlier time periods, and there is an increase in associated stemmed and notched points through time. However, the dating of Glade Pattern foliates remains controversial. While some suggest a terminal date of ca. 3500-4500 cal BP (cf. Budy et al. 1986; Minor 1987; Pettigrew 1980, 1990; Pettigrew and Lebow 1987), others have argued that leaf-shaped points are found in Late Period sites and may represent a functional class of artifacts used for as long as 7,000 years (cf. Connolly 1986, 1988; Connolly et al. 1994; O'Neill 1989):

> While chronological variation within the tradition may be observed (increased relative frequency of stemmed vs. unstemmed points in assemblages through time, increasingly distinctive shouldering on foliate points, decrease in the frequency of serrated vs. unserrated foliates, and decrease in overall size of otherwise morphologically similar points), there is clear continuity throughout the tradition recognized in conservation of projectile point form, and in persistence of other distinctive artifact types. [Connolly et al. 1994]

Connolly et al. (1994) includes the following sites and components as having post 3500 cal BP Glade assemblages: the PSG I component at Point St. George (CA-DNO-11), 2260 ±

210 BP (Gould 1972), the lower component at South Umpqua Falls Rockshelters 600 ± 50 BP (Minor 1987), and at the Stanley Site (35DO182; Connolly 1986).

Middle Holocene (Borax-Mendocino) Transition (6700-3300 cal BP)

As observed by Moss and Erlandson (1995:33), "the Middle Holocene (ca. 6700-3300 BP) represents a crucial temporal gap along much of the Pacific Coast." This is certainly the case in northwestern California where few sites dating to this period have been identified and the timing and nature of the transition between Borax Lake Pattern and Mendocino Pattern is poorly understood. For example, Hildebrandt (2007:91) points out that in the uplands of Pilot Ridge "Hildebrandt and Hayes (1993) could not identify archaeological assemblages falling between the Borax Lake and Mendocino Patterns, so they (probably incorrectly) pushed the age of the Borax Lake Pattern forward in time." Hildebrandt (2007:91) goes on to forward two (not mutually exclusive) possibilities, first, that "a Middle Holocene archaeological record actually exists but is not being recognized," or second, that "some of the problem may stem from the xeric climate conditions of the Middle Holocene…which may have negatively impacted the anadromous fishery and other important resources, perhaps causing a dispersal of human populations in this interval."

Diagnostic artifacts that date to this interval include the McKee Uniface, which in northwestern California is commonly found at sites with "Oregon series" points. McKee Unifaces are thick leaf-shaped unifaces, originally defined by Baumhoff (1985), and appear to date between 5000 and 3000 cal BP, corresponding to the late end of the Borax Lake Pattern and continuing into early Mendocino Pattern assemblages. Large serrated lanceolates from Pilot Ridge sites are referred to as "Oregon series" points by Hildebrandt and Hayes (1983, 1993). Though they lacked a datable assemblage at Pilot Ridge, as observed by Greg White (personal communication), the points are identical to those found at sites along the Rogue and Applegate Rivers in southwestern Oregon. At the well-dated Marial site (35CU84), they are commonly found in deposits dating to between 5500 and 2500 cal BP, with a peak at 4000 BP. Finally, Squaw Creek series points are large contracting-stemmed projectile points which also date to this period (Basgall and Hildebrandt 1989).

Mendocino Pattern (5000-1500 cal BP)

The Mendocino Pattern in northwestern California dates to between 5000 and 1500 cal BP. Most sites appear to represent seasonal camps of highly mobile hunter-gatherers with a terrestrially focused diet. Time-sensitive artifacts for the Mendocino Pattern include corner and side notched darts of the Mendocino and Willits series. Other artifacts found in Mendocino assemblages include handstones, milling slabs, flake and cobble tools, and less commonly, cobble mortars and pestles (Hildebrandt 2007).

North of Mendocino County, coastal Mendocino Pattern sites generally date to later than 2500 cal BP and include Humboldt Bay (CA-HUM-351; Eidsness 1993), sites along the King Range (CA-HUM-351; Hildebrandt and Levulett 2002; Levulett 1985), and the lower component at the Point St. George site (CA-DNO-11) dating to 2260 ± 210 BP (Gould 1966a, 1972). In the uplands at Pilot Ridge, Borax Lake multi-activity sites were replaced by specialized Mendocino Pattern hunting camps, a change that led Hildebrandt and Hayes (1993) to hypothesize that village sites had emerged at around 3500 BP in lowland riverine settings. The settlements were supported by the intensive use of salmon

and acorn; an adaptive shift made possible by the development of sophisticated extractive technologies (e.g., fish weirs); and the establishment of permanent storage facilities (e.g., plank structures).

Gunther Pattern (1500-150 cal BP)

The Gunther Pattern is marked by a dramatic increase in site frequency, the appearance of sedentary villages along the coast of California and rivers in southwest Oregon, and a general increase in cultural elaboration and artifact diversity. Several major changes occur in the coastal archaeological record of northwestern California, particularly at later Gunther Pattern sites from Humboldt Bay north, including CA-DNO-11 at Point St. George (Gould 1966a); CA-HUM-129 at Stone Lagoon (Milburn et al. 1979); CA-HUM-118 at Patrick's Point (Elsasser and Heizer 1966); and CA-HUM-169 at Trinidad (Elsasser and Heizer 1964). Use of upland locations appears to be marginal during this time, sites being visited relatively infrequently for hunting and gathering purposes (Hildebrandt and Hayes 1993). In southwestern Oregon, Late Period sites are very similar to those of northwestern California, though the time period is sometimes separated into an interior pattern (the Siskiyou Pattern, beginning ca. 1700 cal BP) and a coastal pattern (the Gunther Pattern, ca. 1100 cal BP). Key Late Period sites in southwestern Oregon include 35SC5 at Bandon (Cressman 1952), Gold Hill (Cressman 1933a, 1933b), 35CU61 at Pistol River (Hefflin 1966), and 35CU37 at Lone Ranch Creek (Berryman 1944).

Assemblages include high frequencies of straight to contracting-stemmed Gunther series projectile points. Late triangular arrow points include Gunther series (Gunther Barbed, Gunther Variant, and Gunthersnake), Rattlesnake Corner Notched, Corner Notched and Desert Side Notched points. Gunther Barbed points have straight to contracting stems and characteristic long barbs or tangs which are usually lower than the base (Treganza 1958:14). Gunther Barbed points are widely distributed throughout northern California and Oregon and are found as far north as the Columbia River, Washington, and as far south as Tulare Lake in California's Central Valley. This type dates to as early as 1500-1800 cal BP, but shows an increase in frequency after this time, and were used up to the Contact Period (Treganza 1958; Justice 2002). Though work remains to be done to refine the Gunther Series chronology (Jaffke 1997), Gunther barbed points seem to have longer and more defined barbs later in time Gould (1966a). Gunther Variant points have longer length-to-width ratios than Gunther Barbed points and do not have long barbs or tangs. This type fits Treganza's (1958) definition of an "ill-defined" barbed or tanged subtype and are similar to what Jaffke (1997) calls Early Variant Gunther Points, which have wide, long, and usually contracting stems with neck widths greater than 7.0 millimeters. Three of these points were recovered at CA-MEN-428B at MacKerricher State Park from a component with the following dates: 1500 ± 80 BP, 1680 ± 80 BP, and 1680 ± 100 BP (White 1989). Rattlesnake Corner Notched points are small corner notched points with a narrow neck width and straight-to-convex basal edges (Baumhoff 1985; White 1979:178) and are Late Period to Contact Period markers, probably appearing 900-600 years ago. North of Round Valley, Rattlesnake Corner Notched points are rare in areas where Gunther Barbed points dominate. Gunthersnake points resemble Gunther Barbed points but have an expanding base similar to Rattlesnake Corner Notched points. They are likely an intermediate form between the two points and may be a very Late Prehistoric to Contact Period marker for the area.

Jaffke (1997:103) introduced the subtype to address the range of variation he found in a sample of 445 late triangular points from Mendocino County. Observing that Gunthersnake and Rattlesnake points overlap in their distributions in Mendocino County, he hypothesized that the variant reflected technological influence from the Rattlesnake cluster.

Desert Side Notched points are small, triangular side notched points originally defined by Baumhoff (1957:10) and Baumhoff and Byrne (1959). They are found throughout Western North America, the earliest of which are approximately 800 years old from the Great Basin. Desert Side Notched points spread to northwestern California during the terminal Late Period and were in use through the Contact Period. While regionally rare, Desert Side Notched points are an excellent time marker for these periods.

In northwestern California, concave-based projectiles date from the Late Period to Contact Period. Following Gould's (1966a:56-57) observation that the ethnographic Tolowa distinguished these points based on size—the large points being tips for composite harpoons used in sea mammal hunting and the smaller points used as arrows—the size of concave-based points is often correlated with function (e.g., Milburn et al. 1979). The smaller points, however, may also have been used as harpoon tips for fishing or hunting small game (c.f. Bennyhoff 1950:299) and their presence in inland riverine sites suggests that they may be associated with salmon fishing (Lyman et al. 1988:84). Finally, although large concave-based points are associated with distant offshore marine mammal hunting and oceangoing canoes by Hildebrandt (1981, 1984) and Jobson and Hildebrandt (1980), Lyman et al. (1988) argue that this is unclear and that the points may have been used to hunt in nearshore environments.

Other representative Late Period artifacts include a large number of specialized woodworking tools used for the construction of permanent plank houses and canoes (e.g., adzes, mauls, and wedges) and ground stone (pestles, mauls, hammerstones, and mortars). Net sinkers are abundant at some sites, reflecting the use of stored nets for gill netting fish or capturing waterfowl. Polished stone artifacts are plentiful compared to earlier time periods, as are steatite bowls, which were used as grease-catchers usually for seal oil. Steatite was also used to fashion finely made pipes and pendants. Wealth items found in the archaeological record include zooform clubs and large obsidian bifaces. Miniature versions of both of these wealth items have been discovered in the Smith River area.

HISTORICAL CONTEXT

Direct Indian-white contact previous to 1850 was largely limited to the coast and limited by the northwestern California's inaccessibility and paucity of resources desirable to European-Americans. This is in stark contrast to the experience of central and southern California Indians, who had a much longer history of white contact (Hurtado 1988:123), where Spanish and Russian colonies were established as far north as Pomo Country in present-day Sonoma County. Until the Gold Rush, northwestern California indigenous groups largely maintained control over their ancestral territory. Waves of disease, however, did impact local populations to an extent that is not well understood.

This changed dramatically when the discovery of gold on the Trinity and Klamath Rivers inspired thousands of miners to emigrate to the region in the 1850s. The Contact or Late American Period was devastating to local Indian populations of the Northwest coast.

Disease

Although direct Indian-white contact came relatively late to northwestern California, local Indian populations suffered waves of disease which altered and reduced populations to an unknown extent (Erlandson and Bartoy 1996). Several oral accounts demonstrate that disease swept through the region as early as 300 years ago. Based on interviews with Tolowa elders in the early 1960s, Gould concluded that the village at Point St. George (CA-DNO-11) was abandoned due to a cholera epidemic in the 1700s to early 1800s. His informants told him that many people died of a painful stomach sickness which caused them to "pass blood," symptoms characteristic of cholera (Gould 1966a:96-97). Cora DuBois's informants described smallpox and measles outbreaks which hit the region in 1824 and 1836, respectively. Both were "very destructive" and "sweathouse practices intensified [the] danger…so that many of their once populous villages [were] left without a representative" (DuBois n.d.).

Early Direct Encounters: Explorers and Fur Traders (AD 1700s-1840s)

The Yurok village of *Tsurai* at Trinidad Bay is documented as the most frequently visited site by Euro-American explorers in northwestern California prior to the Gold Rush of the early 1850s, apparently because of its accessibility relative to other places along the north coast's rocky shores (Heizer and Mills 1952). Humboldt Bay, for example, was generally avoided due to rough waters and to avoid direct conflict with the Wiyot (Raphael and House 2007:52).

Early encounters at *Tsurai* include landings at the village by Spanish naval officer Juan Francisco la Bodega y Quadra, in 1775, and British explorer George Vancouver, in 1793. Their diary entries represent the earliest written observations of north coast native people and lands (Heizer and Mills 1952). American- and Russian-sponsored ships also called at *Tsurai* when carrying European goods to trade for sea otter pelts during the Northwest Coast fur trade of the early 1800s (Heizer and Mills 1952).

Heizer's 1949 excavations at *Tsurai* at Trinidad Bay (CA-HUM-169) and related documentary evidence revealed evidence of early encounters with traders, explorers, and Gold Rush miners dating between AD 1620 and 1916. Trade items such as iron swords, copper bracelets, and glass beads, along with other historic material were found in the historic component of the site along with artifacts identical to prehistoric types. There is evidence that historic contact changed the subsistence patterns of *Tsurai* villagers. For example, an increase in elk and deer bone suggests that hunting of these animals became more important, a development Heizer and Mills (1952:14-15) hypothesize is related to the introduction of guns, which would have been more effective in hunting of large land mammals than snares and the bow and arrow. Archaeological evidence of the use of guns (e.g., guns or associated ammunition such as bullet casings and cartridge primers), however, is not provided in the Heizer and Mills (1952) study.

Jedediah Strong Smith's 1828 expedition is regarded as the first direct Euro-American contact with many northwestern California groups, including the Tolowa and Hupa (Davis 1989:369-370; Gould 1972:134-135). Smith led a party of 18 men and 300 horses in a quest to establish a trading post in the area, entering the region via

the Trinity River. He traveled through Hoopa Valley, then west to the coast, and then to the north into Oregon.

"The Time the World was Turned Upside Down": The California Gold Rush (AD 1848-1854)

Once gold was discovered on the Trinity River in 1848, the riches of northwestern California were revealed to the outside world (Hurtado 1988:118). Visions of sudden wealth inspired thousands of miners to emigrate to the region. For local Indian populations, the Gold Rush era was a time of rapid and cataclysmic change. In the 1850s "the north became California's dark and bloody ground" (Hurtado 1988:123).

Violent encounters commenced with the founding of major towns, including Eureka (1850) and Crescent City (1853). "Wars" of extermination took place throughout California, and "attacks on Indian villages by volunteer military companies or regular army units, and casual killings, were common until about 1870" (Heizer and Almquist 1971:27). Such violence amounted to officially sanctioned genocide (Madley 2009, 2011; Platt 2011:158-164.) The intent and attitude of the time was clearly stated by California Governor Peter H. Burnett in 1851:

> That a war of extermination will continue to be waged between the two races until the Indian race becomes extinct, must be expected; while we cannot anticipate this result with but painful regret, the inevitable destiny of the race is beyond the power and wisdom of man to avert. [Heizer and Almquist 1971:26]

Native people were pursued by locally formed militias, which were subsidized through State and Federal governments. Although some of the massacres gained historical prominence (e.g., the massacres at Indian Island in Wiyot Bay, the "Burnt Ranch" massacre at *Yontocket* village in Tolowa country, and the Clear Lake Massacre of Pomo at Bloody Island), scores of people were killed throughout the region in smaller or less known encounters.

The devastation California Indians suffered in this era is well-documented and widely acknowledged (cf. Cook 1976; Heizer and Almquist 1971; Castillo 1978; Churchill 1997; Hurtado 1988; Kroeber 1961; Madley 2011; Norton 1979; Secrest 2003). The massacres and upheaval of the 1850s are referred to by many Indian people as the Holocaust. The Tolowa call this "the time the world was turned upside down" (Reed 1999).

Despite the extreme upheaval, practically no archaeological studies have directly addressed this era. As noted by Lightfoot (2006:282), "in contrast with the wealth of information on indigenous encounters with European explorers and colonists, Native peoples essentially disappear from the archaeological literature with the advent of American colonialism."

Reservations and Indenturement (1850s-1880s)

Other factors contributed to the decline of Indian populations during this time, including malnutrition, kidnapping, and forced servitude. Many native Californians in the northern counties were forcibly detained in reservations beginning in the early 1850s. Indian people were subjected to regular roundups in many places, and were forcibly removed to reservations including Klamath Reservation on the lower Klamath River, the Hupa

Reservation in Hoopa, Round Valley in Yuki territory, and the Siletz Reservation in southwest Oregon.

New settlements, mining activities, and the increasing numbers of ranching and farming operations constrained Indian people's access to traditional lands and resources. After the Gold Rush began, "the universal conversion of fertile valleys into farms, the widespread cattle ranching on the hills, and the pollution of the streams all combined to destroy the animal and plant species used for food. The transition to a white diet, although ultimately accomplished, was rendered difficult by economic and social obstacles. During the interim a great deal of malnutrition was present" (Cook 1976:347).

Forced labor was widespread and was legitimized in 1850 by the Act for the Government and Protection of Indians (Chapter 133, Statues of California, April 22, 1850). According to Heizer (1974:219), between 1850 and 1863, as many as 10,000 Indian people were indentured or sold into "what can only be classed as a particular and local form of slavery." Citing the Statute (reproduced in Heizer 1974:220-226), Madley describes how this worked:

> Under the act, children could, with consent of "friends or parents," be held and worked without pay until age fifteen (for females) or eighteen (for males). The act also empowered whites to arrest Indian adults "found loitering and strolling about," or "begging, or leading an immoral or profligate course of life." When a court received a "complaint" along these lines, court officers were required to capture and lease "such vagrant within twenty-four hours to the best bidder." Successful bidders could then hold and work their prisoners for up to four months without compensation. "Any white person" could also lease labor by visiting a jailhouse and paying "the fine and costs" for any "Indian convicted of an offence….punishable by fine." Because few Indians had access to sufficient funds, jails became low-cost labor suppliers. Finally, while the act stipulated that "forcibly convey[ing] any Indian from his home, or compelling him to work" was punishable by a fine of "not less than fifty dollars," it also read, "in no case shall a white man be convicted of any offence upon the testimony of an Indian, or Indians,"…Indians could thus be forced into unpaid work on trumped-up charges. [Madley 2011:312]

Young women and children were particularly vulnerable under this law. According to Cook (1976:61) as many as 3,000-4,000 Indian children were kidnapped during this time. Throughout this unprecedented period of emigration into California, males vastly outnumbered females, and with so few white women on the northern frontier, Indian women were sought after as domestic servants and/or for sex: "All Indians were at risk during the tumultuous 1850s, but women's chances for survival were measurably worse than men's. Brutal assaults, deadly diseases, and general privation killed women and left their communities' reproductive potential in doubt" (Hurtado 1988:188).

Resistance, Survival, and Revitalistic Movements

Native attempts at resistance were common, but typically led to retaliatory violence. In interior Humboldt County, the military had many forts and there were multiple skirmishes with Redwood Creek Indians, Mad River Indians, and Yeager Creek Indians.

Depending on the event, Indians were shipped off to Fort Gaston, Fort Humboldt, Smith River Indian Reservation, and Round Valley Indian Reservation. Many died in captivity. The Yurok participated in a revolt against settlers in 1855, the Red Cap War, which was successful for a time in stemming the flow of white settlement. The Yurok confronted intruders at a village on the south shore of Big Lagoon (*Opyuweg*), but again, this resulted in a massacre. Survival in many places depended on fleeing into hinterland areas far away from white settlements and mining centers.

Though many aspects of traditional life (such as major dances) vanished from public view so people could escape persecution and/or prosecution, they merely went underground and continue to this day. Despite the detentions and upheaval of the reservation period, Indian people maintained traditional lifeways to a remarkable degree. For example, a diary detailing the goings-on of life at Reservation Ranch, where many Tolowa were forcibly detained in the late 1800s, notes that the Indians "maintained a month-long salmon gathering, suggesting that effective organization of large-scale net fishing was something the Tolowa continued in captivity" (Collins 1998:44). Local newspapers also reported smelt fishing camps and crab harvests in the 1800s. As Collins (1998:44) puts it, the historical and archaeological evidence points to a "persistent effort on the part of the Tolowa people to carry on living as they had lived, in extended kinship-organized villages, with subsistence based on skilled fishing, gathering, and hunting."

The Ghost Dance, a revitalistic movement or religion, spread into the area via the Siletz Reservation in the early 1870s (DuBois 1939). The Earth Lodge Cult and Big Head or Bole Maru religion are related revitalistic movements that took hold primarily in north-central California and in Pomo country in the southern North Coast Ranges beginning around this time. The Ghost Dance combined elements of traditional religion with Christianity and began after the Northern Paiute man Wodziwob (Grey Hair) received visions in the late 1860s indicating that native peoples could cleanse the world of evil and reunite the living with the dead by practicing the Ghost Dance. The Ghost Dance provided hope in a hopeless era. A return to pre-contact lifeways was greatly anticipated, but people became disillusioned as the prophecies were not realized. Although the Ghost Dance religion spread to other parts of the United States later, in the 1890s, most people in northwestern California had given up the Ghost Dance by this time.

Along the north coast, the Indian Shaker Movement, which began in Puget Sound in 1881, arrived among the Yurok in 1926, the Tolowa in 1929, and the Hupa in 1932. Although most popular in the 1930s and 1940s, people at Smith River had an active congregation in the 1960s (Gould 1966a:135), and there was a resurgence among the Yurok in the 1970s (Pilling 1978:148). The Shaker church in Smith River remains active to this day.

ETHNOGRAPHIC CONTEXT

Early documentation of northwestern California societies includes the journals of explorers and traders in the region (cf. Bodega 1775; Smith in Sullivan 1934; Vancouver 1793), newspaper articles (in particular Powers 1877), and accounts written by local historians (cf. Bledsoe 1881; Von Loeffelholz 1893). The largest corpus of work was produced by UC Berkeley ethnographers and linguists led by A.L. Kroeber who conducted fieldwork beginning at the turn of the twentieth century (cf. Driver 1939; Drucker 1937; DuBois 1932, 1936, 1939; Goddard 1903, 1904; Harrington 1931, 1932; Kroeber 1925,

1936; Kroeber and Barrett 1960; Kroeber and Gifford 1949; Waterman 1920, 1925). Additional ethnographic and ethno-archaeological writings were produced by a later generation of the influential Berkeley "school" (cf. Baumhoff 1958, 1963; Gould 1966a, 1966b, 1975, 1978; Swezey and Heizer 1993), which at the time dominated anthropological research in northwest California. As archaeologists commonly include an explanation of the origin of the ethnographic pattern, this corpus of work—often cited as providing the "baseline" of comparison—has been extremely influential in the development of regional historical models.

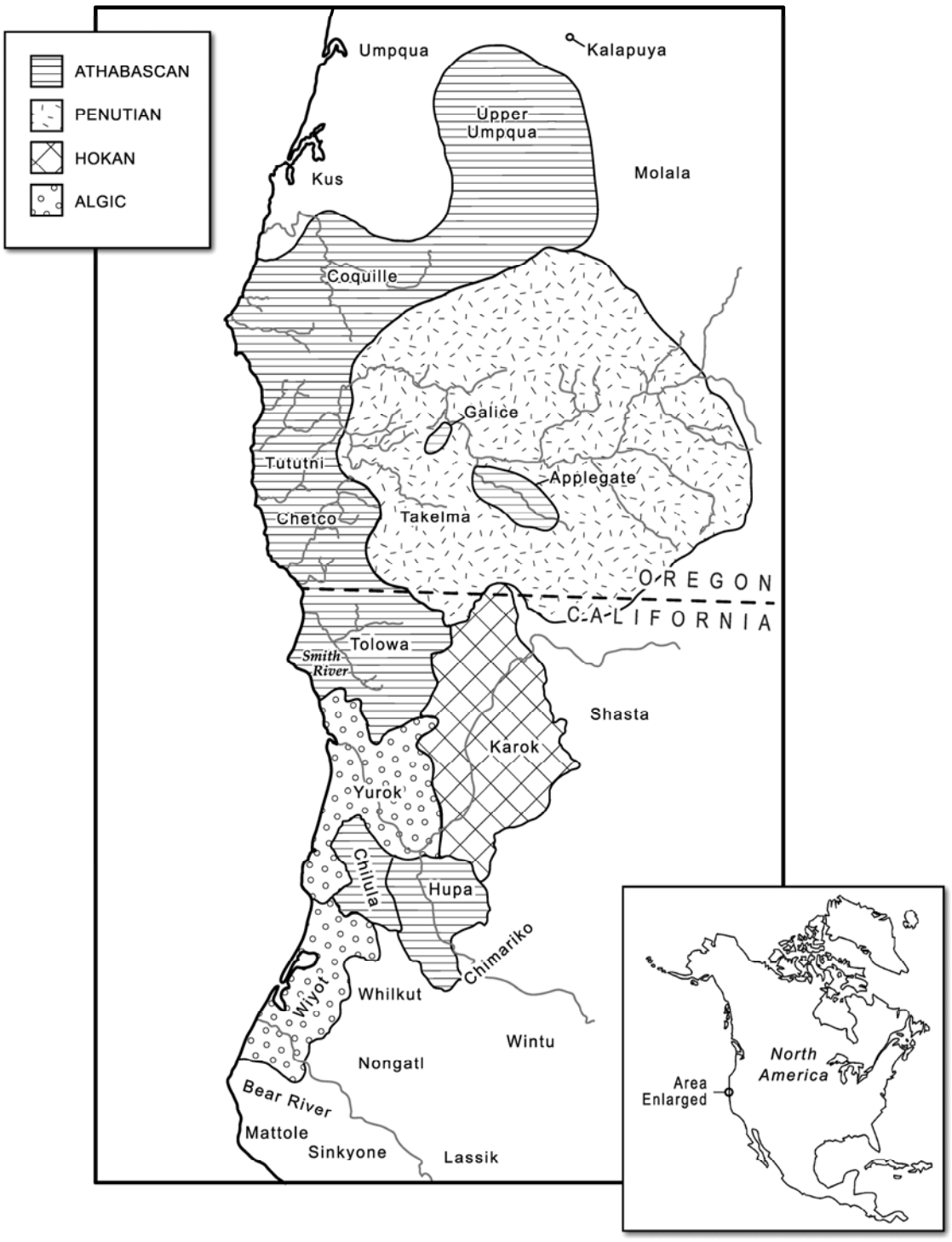
The various ethnographies are fairly consistent in their findings, though regional surveys (cf. Kroeber's 1925 *Handbook*) are biased toward a "core area" of tribes consisting of the Yurok, Hupa and Karuk. Kroeber viewed northwest California culture to be at its height in this area, the "nucleus within the nucleus" being the Yurok (Kroeber 1925:6). Kroeber saw the Yurok as providing the most developed complex technology, arts and ceremonial life characteristic of northwestern California groups. Neighboring tribes, including the Tolowa, Wiyot, and Chilula had a "second order or degree in the civilization" (Kroeber 1925:7). The Mattole, Bear River, Nongatl, Sinkyone, and Coast Yuki were part of the "Marginal or Peripheral Northwest Area" (Kroeber and Barrett 1960). The southwestern Oregon Athabascans, including the Takelma, Chetco, Umpqua, Tutuni, Coquille, and Galice Creek shared a similar way of life and were also viewed as peripheral groups.

The following discussion focuses on groups who lived in plank houses and were classified by Kroeber (1925, 1939) as being part of the southern "province" of the Pacific Northwest Coast culture area (Figure 6). These groups, particularly those in and above Humboldt Bay to southwestern Oregon, and the land they occupied, bear clear cultural and ecological similarities to the groups of the north Pacific. Commonalities include residence within semi-subterranean plank houses organized in coastal and riverine villages, intensive and task-oriented subsistence pursuits, reliance on mass-capture technology and methods, and an emphasis on stored foods with high processing costs. Throughout the region, the household was the fundamental economic and social unit (Drucker 1983), and salmon was a key dietary staple.

Kroeber (1925) rightly showed that northwestern California was a unique Northwest Coast subarea. Compared to the northern and central Northwest Coast (from northwest Oregon to southwest Alaska), houses and households were smaller, political organization was extremely autonomous, property was owned by individuals (rather than groups), and resource intensification worked on a family level with no overarching political structure. Adding to these differences was the importance of acorns in the diet and the use of formal sweathouses, both distinctly Californian traits. As Kroeber put it, Northwestern California societies followed "the aims of the societies of the North Pacific coast with the mechanism of the societies of middle California" (Kroeber 1925:3).

Settlement and Houses

At contact, northwestern California supported relatively high populations of people who resided in semi-subterranean plank houses within permanent villages. Villages were occupied by the entire population for the majority of the year, though people would disperse to hunt, fish, and gather in temporary camps or other locations according to seasonal resource availability. The majority of villagers moved to productive resource patches at



Created by Wendy Masarweh. Shaded areas denote areas where "sweathouse group" is present.

Figure 6. Northwestern California Ethnolinguistic Groups.

From the Ericson Collection, Humboldt State University Library.

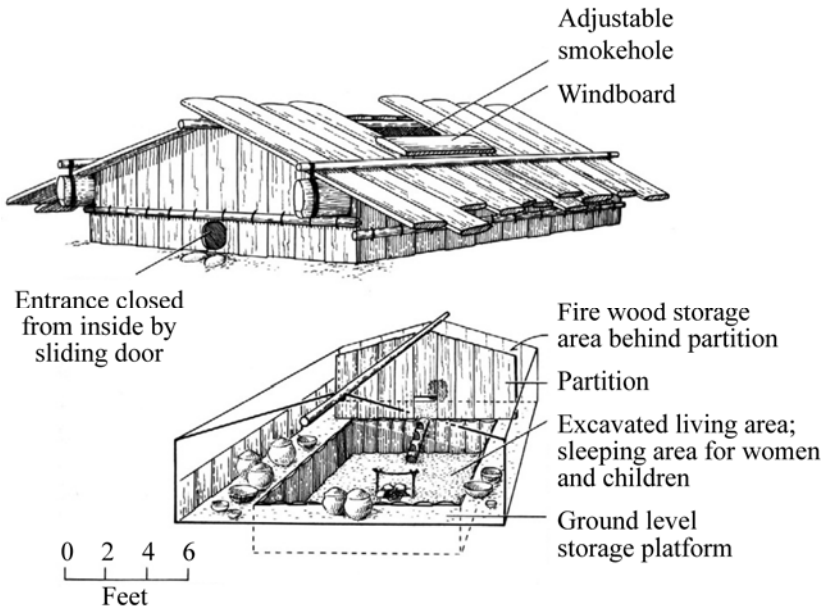
Figure 7. Family Houses and Sweathouse at the Yurok Village of Pekwan.

certain times of the year to procure salmon, smelt, or acorns; at other times of the year smaller groups or individuals traveled to offsite hunting, gathering, or fishing locations. Villages were permanent settlements typically organized in linear rows above flood zones, with house frontages facing rivers or oceans. Major villages tended to be strategically located near prime foraging locations such as estuaries, river mouths, and protected coastal areas such as coastal lagoons. Smaller or minor villages, sometimes referred to as "suburbs" in the ethnography, were typically formed when other villages became too populous or after a disagreement took place between individuals or families.

There were two types of semi-subterranean plank houses used among the Indians of northwestern California: family houses and sweathouses (Figure 7). Although houses varied in minor architectural details, their general form and function was similar throughout the region. Houses were "snug, well-made structures engineered to keep out the constant wind and rain" typical of the North Coast rainforest (Gould 1966a:24).

Construction of plank houses was a group endeavor. Houses were typically owned by male individuals who had to be wealthy enough to feed relatives during house building, which included the laborious task of splitting and preparing redwood planks using adzes, mauls, and wedges (Gould 1966a:23). Typically there were three family houses for every sweathouse, forming the sweathouse group, and these house clusters were grouped according to extended family lines (Kroeber 1925:81).

The family house was where a man's wives, single daughters, and young sons lived (Figure 8). Family houses were square or rectangular and walls were constructed of large upright planks. Roofs were held in place with roof beams and were single pitched (with two



From Gould (1978).

Figure 8. Reconstructed Tolowa Family House.

sloping surfaces; see Figure 8 and Figure 30 on page 88) among the Tolowa, though most other groups had double pitched roofs (three surfaces; see Figure 7). A large opening in the roof served as the smokehole. Entrance holes were round or square and were often positioned to one side at the front of the house. Although the size of the family house varied according to the degree of wealth its owner held, house frontages were typically 15 to 21 feet long (Gould 1978:130; Kroeber 1925:78). An approximately ten-foot-square interior pit, two to five feet deep, was located in the center of the house (Gould 1978:130; Kroeber 1925:79). The family house was kept warm with a centrally located shallow fire pit, which was typically circular and surrounded with stones. Rich men had plank or clay covered floors, while poor men had dirt floors (Gould 1966a:24). People cooked, slept, and went about their daily business in the central pit. A five-to-six-foot-wide shelf, roughly level with the exterior ground surface, surrounded the interior pit. Houses were large storage facilities. Shelves were laden with cooking implements and large baskets containing stored acorns and other foods.

Sweathouses were the primary residence of men and post-pubescent boys. Women were not permitted entry except during special ceremonies. Sweathouses were smaller than family houses, with frontages around 12 feet long, and were square or rectangular. Unlike family houses, sweathouses were entirely subterranean and there was no storage shelf. Planks extended from the ground only on the gable ends of the house; the front and back (pitch ends) were also lined with planks but they did not extend past the ground surface. The "shed like" roof was single pitched and, among the Tolowa, was often covered in earth (Gould 1978:130). The entry was a small passage through the roof approximately 1.5 feet wide and always faced the river or ocean. A notched log ladder was used to enter the sweathouse. Sweathouse fire pits were either located in the corner of the house and had special underground ventilator shafts through which smoke could escape, or were located in the center of the house. In the latter case, there was an additional passage (an exit) and no ventilator shaft (Gould 1966a:23). When present, the exit was a 14-x-10-inch oval cut

through a plank in the gable wall to the left or right of the entrance wall. Exit holes were closed with wooden plugs. The exit was subterranean and a cobble-lined passageway extended from the exit hole to the outside (Kroeber 1925:80-81). Sweathouse fire pits were "cubical," lined with flat stones and averaged 1.5 feet in depth, much deeper and more substantial than the shallow and circular family house hearths (Kroeber 1925:80). Floors were lined with either clay, "well-adzed planks which years of contact with human bodies have polished, or with carefully selected and fitted slabs of stone, often of considerable size" (Kroeber 1925:80).

While Kroeber noted that family houses were often relatively untidy, he remarked that the sweathouse interior was "neatness itself" and was always swept clean (Kroeber 1925:78). Men slept on individually owned wooden pillows in specific places which were named and arranged according to rank (Driver 1939:321; Kroeber 1925:81-82). Men sweated once or twice daily using direct fire (not steam) heat. They would sweat for success in hunting and gambling, and regularly prayed and sang while sweating (Driver 1939:321). Other sweathouse activities included gambling and the construction of bows, nets, and harpoons. Men ate their meals at family houses and, when inspired, visited their wives in their houses at night.

Sociopolitical Organization

Ethnographically, the household was the fundamental economic and social unit throughout the Pacific Northwest Coast (Drucker 1983). Though household size and organization varied, the common denominator is that there was no political organization beyond the local group. Members of a household were related, lived together in close proximity to one another, and performed social and economic pursuits as a unit. In contrast with the rest of the Pacific Northwest Coast, where the local group was a conglomeration of families directed by a hereditary chief, northwestern California sociopolitical organization is typified by a highly local social group structure involving family-based household organization and political autonomy. Families were politically independent, and there was no tribal sense per sé.

The northwestern California household was very small: a family-based unit which included a man, his wives and children, and extended family. This contrasted with the northern Northwest Coast, where several families lived in a single kin group house. As noted above, men and post pubescent boys lived in sweathouses in northwestern California, while women and children lived in larger "living" houses. This is the only area in the Northwest Coast where men lived full time in sweathouses. In the Pacific Northwest north of central Oregon, sweathouses were used, but they were never as formal (Drucker 1950).

For the Yurok, seven men typically lived in a sweathouse, each sleeping in a named, ranked area of the house (Kroeber 1925). Family households were loosely affiliated through the sweathouse group, which consisted of a series of houses whose males used the same sweathouse. On average, a sweathouse group consisted of three family houses and one sweathouse and linked three families, or 21 individuals. Thus the northwestern California sweathouse group was about as large as the classic northern Northwest Coast household, which averaged between 20 and 25 individuals of varying social status (Matson 2003; Mitchell and Donald 1988). Compared to the majority of the northern and central Pacific Northwest Coast, however, political allegiances were strikingly informal, economic pursuits

were small family-group (not communal) endeavors, and resource ownership rested in the hands of individuals rather than in the corporate group and the hereditary chiefs that led them.

The northwestern California family household was typically directed by a man whose position was based on wealth, not genealogy. It would be incorrect to refer to this man as a chief or even a headman—he did not hold any power beyond the family unit. Family households were autonomous; there was no overarching political structure, decisions were made by common consent, and there was no hereditary chief who directed economic pursuits or drove intensification. Kroeber characterized northwestern California as being in a state of loose political organization:

> Where there is scarcely a tendency to group towns into higher units, and where even a town is not conceived as an essential unit. In practice a northwestern settlement was likely to act as a body, but it did so either because its inhabitants were kinsmen or because it contained a man of sufficient wealth to have established personal relations of obligation between himself and individual fellow townsmen not related to him in blood. [These groups] simply did not recognize any organization which transcended individuals and [family] kin groups. [Kroeber 1925:830]

Wealth System

The pursuit of wealth, its ownership by individuals, and its link to status are defining elements of northwestern California culture. Wealth items, including obsidian blades, white deerskins, and dentalium shell money were acquired through various means: dowries, trade, the collection of fines, or by buying them with surplus foods. The pursuit of wealth and status could be all-consuming:

> The northwesterners alone have measured the precise value of every man's life or wife or grief. Every injury, each privilege or wrong or trespass, is calculated and compensated. Without exactly adjusted payment, cessation of a feud is impossible except through utter extirpation of one party, marriage is not marriage but a public disgrace for generations, the ceremony necessary to the preservation of the order of the world is not held. The consequence is that the Yurok concerns his life above all else with property. When he has leisure, he thinks of money; if in need, he calls upon it. He schemes constantly for opportunity to lodge a claim or evade an obligation. No resource is too mean or devious for him to essay in this pursuit. [Kroeber 1925:2]

Dentalium shell beads, originating in the Puget Sound area near Vancouver Island, functioned as real money in this system (Kroeber 1925:23). Money was in the realm of prestige and subsistence economies, although it was treated differently. Gould (1966a) maintains that among the Tolowa, subsistence items (such as dried salmon) could be exchanged for dentalia (contra Chagnon 1970:14; Drucker 1937:241; DuBois 1936:50).

These tended to be private exchanges between individuals. Money associated with prestige exchanges (i.e., bridewealth) were not divided: entire strings were exchanged and done so in a public setting (Gould 1966a:87). Mere possession of these items was not enough to guarantee high status within the community. Wealthy men had to defend certain rights, and:

> Should someone infringe on these rights, the injured person could demand compensation or take revenge. If he did neither, he lost the respect of his fellow men. They would feel free to injure or insult him as they chose. It is clear from account after account of injuries and claims that it was not avarice which motivated demands for wergild. To make a claim showed that a man would not allow himself to be treated with contempt, that he commanded the respect of kinsmen to the degree that they would fight for him were his demands not met. In other words, here was a man of importance. One soon feels that the tokens paid were of little intrinsic value to the people themselves except as they demonstrated recognition of the recipient's position in society…. A weakling had no place in this culture. [Drucker 1937:225]

Women's labor was the link to a man's wealth quest. Women "bore the brunt of the tedious day-to-day labor of preparing and storing away food," such as the smoking and drying of fish and acorn meal preparation (Gould 1966a:70). Subsistence items were limited to the amount a man's wife could process. A man with many wives enhanced his prestige by gaining access to more processed and stored food that could be exchanged for treasures such as dentalia and woodpecker scalps (Gould 1966a:70).

Resource Ownership

In addition to wealth items, all valuable property was owned, including fishing spots, oak groves, and certain technologies. Throughout the Northwest Coast, there were commons, but all productive resource patches were owned, by corporate groups in the northern and central Pacific Northwest Coast and by individuals in northwestern California There was a finite number of owned places and rights to these places were jealously guarded. No matter how abundant a particular resource was in these patches, ownership limited outside groups or individuals from accessing them. In northwestern California, wealthy people owned these places, and specific rules and monetary values were associated with anything of value.

With salmon fishing, for example, commons (un-owned areas where anyone could fish) were low production patches associated with the "taking of less important varieties," where simpler technology such as harpoons, gaffs, and drag nets were employed (Kroeber and Barrett 1960:4). Owned patches had high potential yields and were where complex technology, including weirs, basketry traps, and lamprey chutes, were employed. The number of owned fishing spots was limited by "environmental factors [which made] some localities suitable for building weirs or setting gill nets, [which had] special combinations of depth of water, current speed, type of bottom. Such places were infrequent" (Drucker 1983:3).

Valuable fishing spots were owned individually or shared by several people. In the latter case, a complex rotation system of rights to the fishing spot was followed (Kroeber 1925:33; Kroeber and Barrett 1960:3). Good fishing places had a real monetary value. The value of a fishing spot might be from one to three dentalia. They could be sold, given away or passed to kin by inheritance. Ownership was not limited to the vicinity of the owner's residence, and might be "far flung" (Kroeber and Barrett 1960:3-4). Ownership extended to certain technology. For example, only wealthy individuals could own and maintain large gill nets. Individuals who did not own anything could still fish—but in common areas and with the technology associated with these places.

Subsistence

Aboriginal groups were hunter-gatherers who, other than casual maintenance of tobacco patches by some individuals, did not practice plant cultivation. Resource abundance and the extraordinary economic potential of northwestern California is remarked upon in most accounts of aboriginal food-gathering pursuits. While resources were abundant, food-gathering pursuits were generally intensive and task-oriented, and storage was a key part of the system. People relied on mass-capture technology and methods such as weir and net fishing, and, again, processing costs were high, whether they were "front-loaded," as with salmon or "back-loaded," as with acorn leaching. Fish, game, and most roots are front-loaded resources as they are expensive to procure and process, but once stored, do not take a lot of time to prepare before being consumed. Salmon, for example, are front-loaded because they take a great deal of time to capture, prepare, and dry before being stored. The effect is intensified when taken with nets and other complex technology, which take a great deal of time to make and maintain. Weirs also involve a great deal of upfront costs, including construction and coordination. Back-loaded resources (e.g., acorns and piñon pine nuts) are comparatively simple to procure and store, but a great deal of effort is involved in processing them before consumption. Acorns, for example, can be collected and stored easily, but processing time, particularly when intensive leaching techniques are employed, are extremely costly (Bettinger cf. 1999a, 1999b).

Food processing fell to women, and the spoils of this labor were owned by individual family households; while it was often shared with needy people outside of this unit to show generosity, doing so was distinctly viewed as charity that defined a person of standing.

While people lived the majority of the year at villages, they moved to camps as resources became available. Salmon, surf fish, seaweed, and large mammals were partly or fully processed on-site and transported back on foot or by canoe along streams. Acorns were transported and processed at villages on an as-needed basis. Stores of foods were maintained within houses at main villages. Baskets of dried salmon, dried meat, seaweed, smelt, and acorns lined the shelves of family houses. Salmon and acorns were the most important terrestrial foods in the diet of Contact Period groups in northwestern California. Throughout the ethnography, salmon is said to be the primary staple, while acorns come in a close second.

Salmon

Ethnographers detailed the elaborate fishing technology that was used to take anadromous species, including Chinook salmon, silver salmon, steelhead, lamprey, and sturgeon. A great range of facilities and implements were used, from large communal weirs with associated ritual and formulistic building practices (such as the Kepel dam [Waterman and Kroeber 1938]), to simple fish spears and poisons (Kroeber and Barrett 1960).

Variability in fishing technology is best understood in terms of environmental constraints, rather than cultural differences (Table 4). "Different environmental conditions ruled the life cycles of these species, controlled the methods by which each might be taken, and gave rise to the different devices" (Kroeber and Barrett 1960:8).

Weirs include both fixed and movable types. Movable weirs were woven brush mats that were essentially a "portable fence." They could be used wherever needed and rolled up when fishing was completed (Kroeber and Barrett 1960:29). Fixed weirs are dams made of rocks and/or wood and brush that obstructed fish on their spawning route (Figure 9). They

could be "V" shaped or straight, and could be as simple as a line of rocks or very complex constructions, with impounding corrals and platforms for harvesting fish.

Table 4. Riverine Habitats and their Associated Technologies.

RIVERINE HABITAT	ASSOCIATED TECHNOLOGY
River outlets, bars	Harpoons
Shallows	Weirs, spears, dip nets, gaffs
Riffles	Harpoons, gaffs, trapping, driving
Eddies	Lifting nets from platforms
Falls, cascades	Plunge nets, traps, harpoons, gaffs, baskets
Sluggish water, deep pools	Diving, bow and arrow, snares, poison, "sturgeon riding"
Creeks, small streams	Short weirs with basketry traps, hook and line, sniggling

Notes: Data from Kroeber and Barrett (1960:7-8).

From Edward S. Curtis Photograph, Library of Congress, Prints and Photographs Division.

Figure 9. Hupa Fish Weir.

The construction of some weirs, such as the famous Kepel dam, was a communal endeavor, associated with strictly prescribed ritual. At Kepel, a formulist oversaw the construction of ten named sections that were built by ten groups of men. Each section had a gate with an enclosure where fish were taken with dip nets. The Kepel dam was torn down after ten days and was followed by a Deerskin and Jumping Dance. The entire endeavor lasted about 50-60 days, and was "the most elaborate undertaking of any kind among the tribes of the Northwestern region" (Kroeber and Barrett 1960:12). However, most weirs were smaller and less complex, and participation at even the largest weirs was purely voluntary.

There was a wide variety of fish nets, including eight forms of conical nets, four flat, and one cylindrical type. Some conical nets were staked in the water or were dragged with a canoe. The largest conical net was the lifting type (Figure 10). It was usually used at staging areas or platforms above strong eddies. The net was attached to an A-frame of poles and fastened to shore to guard against the strong current. The fisherman stood on the platform and lowered the triangular net into the water. Once the net contained a fish, it was raised, and the fish were clubbed (Kroeber and Barrett 1960:32).

Plunge nets were also mounted on an A-frame, but the poles were longer and were fastened with a crosspiece or "head bar." The net was thrust into the water and held either to the side or the crossbar was stopped (or "caught") with the fisherman's head. A hat was worn in the latter case as a protection against the strong current: "the net and the frame descend until the crossbar strikes the back of the fisherman's head, where the basketry cap cushions the blow as the frame is stopped" (Kroeber and Barrett 1960:42). V-shaped scoop nets were used in coastal environments for surf fishing. The net was lowered into a wave, and as the tide went out, the fish funneled in and the net was extracted.

Other fishing equipment include basketry traps, eel pots, gaffs, harpoons (single and double barbed; see Figure 34 on page 108), hooks, gorges, wooden fish clubs and egg mashers, crab claw alarm rattles, fish knives, eel slitters, jaw breakers, floats, sinkers, anchors, and net gauges or shuttles. There was a general pattern of technological complexity among core groups, graduating to simplicity in peripheral areas (Kroeber and Barrett 1960).

Salmon preparation methods included splitting and cutting into slices, 15-20 pieces for Klamath River groups, smoke or sun drying outdoors or indoors on scaffolds in family houses. Occasionally there were special drying houses; the Wiyot were noted to have stacked smoked fish in houses "as with cord wood, for winter" (Driver 1939:315, 381). Fish bones were ground, and grease and berries were added for taste. The Tolowa mixed ground fish bone with fish scraps to make meal (Driver 1939:381).

Acorns

Acorns were the main dietary staple of most Contact Period groups in California (Baumhoff 1963; Gifford 1936; Kroeber 1925). Acorns provide an excellent source of fat and carbohydrates and can be harvested efficiently in great numbers. The acorns of several species of oak (*Quercus* and *Lithocarpus* spp.) were available in the fall and typically prepared by an elaborate pounding and basin leaching process to remove bitter tannic acids (Figure 11).

In northwestern California, acorns were ranked second to salmon. Yet acorns were used by aboriginal groups such as the Yurok who "ate very largely" of the nut (Kroeber 1925:84). Intensive processing methods were identical to those found in the rest of California. Acorns were leached in a sand basin which was sometimes lined with grass or in an openwork basket lined with sand (Driver 1939:370). The leached flour was boiled in baskets, stone bowls, and wooden or bark boxes, heated with hot stones, was eaten as a mush or soup. Acorn flour was also made into bread, baked on stone or coals or in an earth oven or ashes (Driver 1939:315, 370). Less labor-intensive acorn processing methods employed in northwestern California included leaching whole acorns in mud, usually with shells removed first, and leaching whole acorns in a basket in a stream, occasionally after being allowed to mold in the house. Some groups also processed acorns by simply allowing them to mold in the house (Driver 1939:315).

Courtesy of the Phoebe A. Hearst Museum of Anthropology and the Regents of the University of California (15-1383).

Figure 10. Karuk Platform Net.

Courtesy of the Phoebe A. Hearst Museum of Anthropology and the Regents of the University of California — Pliny E. Goddard (15-4544).

Figure 11. Mrs. Freddie (Hupa) Preparing Acorn Gruel ca. 1901.

Chapter 3: Methods and Curation

This section provides an overview of general field and laboratory methods employed in this project. Project policies and practices related to tribal monitoring and consultation with Tolowa partners are also described.

GENERAL MAPPING AND RECORDING PROCEDURES

To ensure an accurate record of fieldwork, extensive notes were taken and standard forms completed. Notes include profile drawings of unit walls and detailed descriptions of soil stratigraphy, soil types, Munsell soil color descriptions, depth measurements, and an inventory of artifacts. General field and environmental conditions were also noted (e.g., adverse weather, condition of ground surface). Surface survey field notes include site sketch maps, artifact drawings, and site location maps. Auger/shovel testing forms include field specimen logs and auger summary forms. Excavation forms also include field specimen logs, as well as unit summaries and maps, and feature records and map forms. Additional method-specific recording procedures are detailed in the following sections. Archaeological Site Condition Assessment Record forms were completed for all State Parks archaeological sites discovered or revisited throughout this fieldwork.

All proveniences were measured off of the USGS benchmark located in the southeastern edge of CA-DNO-26. As the benchmark is conveniently located at the NPS/State Parks border, all surface survey, auger, and shovel testing proveniences with eastings were on NPS property, and those with westings were on State Parks property. Site maps were prepared for each individual archaeological site and include major landforms, elevations, surface-collected artifacts, roads, buildings, campsites, and other important features. Hand-drawn maps were scanned by the GIS staff at the NPS office in Arcata and provided the base for auger testing and site maps used in later reporting.

SURFACE SURVEY

In general, surface survey was undertaken in areas with good ground visibility and in locations of high cultural sensitivity. Surface survey involved crew members walking in regular (approximately 15-meter) transect intervals. When artifacts were encountered, they were pin-flagged and the area was searched in tighter intervals to determine site boundaries.

AUGER AND SHOVEL TESTING

Early in this fieldwork, a trial was carried out to see if shovel tests were a more effective method than auger tests. It was determined that auger tests were more efficient in terms of time spent excavating and artifact recovery in the study area. Although shovel tests are larger and typically produce more artifacts per test hole, the primary goal of this phase of research was to determine presence/absence of cultural materials, and auger tests sufficiently met this goal. Additionally, shovel tests proved no more efficient than auger tests in breaking through the rock and root laden soil of the study area.

A regimen of auger testing was therefore employed in areas of poor surface visibility and areas with a high likelihood of buried cultural deposits; this was the main method employed in Redwood National and State Park to determine site boundaries and presence or absence of archaeological deposits. Subsurface testing was found to be the most suitable method for assessment of cultural resources in the forested project area.

Auger tests are approximately ten-centimeter-diameter circular holes dug with manual bucket augers by a team of two to three people (Figure 12). Tests were dug in 20-centimeter intervals to the maximum depth possible and were abandoned when large roots, rocks, or other obstructions were encountered. If obstructions were encountered in the first 20-centimeter level of excavation, two to three additional tests were attempted in the area. All excavated soil was dry-screened through 1/8-inch wire mesh hand screens. Recorded information includes soil constituents, Munsell soil color designations, presence/absence of charcoal, modern debris, and, if present, the number and class of artifacts.

From left to right, recorder, screener, and bucket auger "operator."
Note thick vegetation and low surface visibility typical of the area.

Figure 12. Auger Testing Team.

To encourage plant regrowth, the first 20-centimeter level of earth was kept separate from lower material. Upon backfilling, soil deeper than 20 centimeters was placed back first in the auger hole, and then the remaining upper level (first 20 centimeters) of soil was placed on top. Soil was tamped down and covered with forest duff to ensure that auger tests were not visible and to encourage later plant growth in the augered area.

Auger tests were excavated in regular intervals whenever possible (typically every 15 to 30 meters). When tests were "positive" (i.e., cultural materials present), additional tests were extended in a (north/south-east/west) cruciform pattern to determine the horizontal boundaries of the site. Site boundaries were established when at least two consecutive auger tests were "negative" (cultural materials absent). A single positive test was termed an isolated find or an *isolate*.

Charcoal and burned plant material was commonly encountered, the cause of which (anthropogenic, forest fire, or campfire-related) is often impossible to determine without more intensive testing. Thus, though charcoal was noted whenever present, augers with sparse amounts of charcoal and no artifacts were designated negative tests. Additionally, as campground-related refuse was commonly encountered in auger tests, those with only modern debris (i.e., not pre-turn-of-the-twentieth-century historic artifacts) were not designated positive tests.

Shovel tests are approximately 30-centimeter-diameter circular holes dug with shovels. Methods are identical to those specified above for auger tests. Only eight shovel tests were excavated during this fieldwork, while 846 auger tests were dug (Tushingham 2006:Appendix B).

UNIT EXCAVATION METHODS

Excavation units were generally 1 x 2 meters in size and were placed in various locations within sites to ensure that the full extent of the site is sampled. All units were tied to the main site datum which was established prior to the excavation. To maintain vertical control, all measurements (X, Y and Z coordinates) were taken from each unit datum using a string, line level, and metric folding ruler. A transit was used to map sites and was the method used to establish each unit datum to the site datum. Units were dug in stratigraphic levels whenever appropriate; otherwise, arbitrary ten-centimeter levels were employed. Soil was systematically hand-excavated in regular intervals and dry-screened through 1/8-inch wire mesh. With the exception of fire-cracked rock, all cultural materials were collected.

Artifacts were separated by level or feature and bagged and tagged with appropriate provenience information. Artifacts discovered *in situ* were three-point (X, Y, Z) provenienced. Upon the completion of each level, a unit level map was drawn noting visible features, artifacts, large rocks, and roots. Unit profiles were drawn at the completion of each unit, and digital photographs were taken of the base of unit levels, features, and profiles.

Soil samples from features (house floors, hearths, etc.) and soil column samples were collected for flotation analysis. Column samples are 20-x-20-centimeter-wide samples excavated in ten-centimeter increments after the completion of unit excavation. Soil samples were processed at the UC Davis archaeological laboratory using a Flote-Tech flotation machine and separated into non-buoyant "heavy" and buoyant "light" fractions. Analyzed heavy fractions were sorted into >1/4-, 1/8-, 1/16-, and <1/16-inch size grades. A sample of

light fractions from various contexts was analyzed for charred plant remains by Eric Wohlgemuth (see Tushingham 2009 for results).

Plastic tarps were placed under all back dirt, and the first 20 centimeters of soil was kept separate from deeper soil to promote plant re-growth upon backfilling. Following excavation, back dirt was systematically replaced to ensure that units were not subject to future slumping. It was then "naturalized" by placing leaves and other vegetation in the area.

TRIBAL MONITORING AND CONSULTATION POLICIES

Tolowa involvement has been a hallmark of this project. In 2002, when this project began, Redwood National and State Parks Cultural Heritage Chief Karin Anderson initiated consultation with the Tolowa people. Since that time, a partnership has been developed between the Tolowa community, Redwood National and State Parks, and UC Davis.

Tolowa tribal monitors were present during all phases of fieldwork; their observations and input were regularly asked for, and their insights often directed the course of fieldwork and provided many intellectual contributions to the study. Tolowa monitors included Marilyn Bray, Margaret Moorehead Brooks, Richard Brooks, John Green, Elaine Moorehead, Brock Richards, William (Bill) Richards, and Marva Scott. The Field Director worked closely with monitors and consulted with them regularly concerning daily field operations. Students were instructed to keep monitors informed throughout fieldwork.

In addition to Tolowa monitors, many members of the Tolowa community from the Elk Valley Rancheria, Smith River Rancheria, and Tolowa Nation, and adjoining tribal groups (in particular, members of the Yurok Tribe) visited the site. Site tours and summaries were given by the Field Director, or a Teaching Assistant if the Field Director was unavailable.

The project also involved regular consultation with Tribal members, Culture Committees, and Tribal Councils of the Elk Valley and Smith River Rancheria. Project reporting included attendance at culture committee meetings, timely reporting of findings via presentations, written reports and letters, and field protocols.

LABORATORY METHODS AND CURATION

During field school operations, a laboratory was set up at the Hiouchi Visitors Center for initial artifact cleaning, sorting, and preliminary analysis. Most in-depth artifact analysis was performed by the author, John Darwent, and laboratory assistants at the UC Davis Archaeological Laboratory, except for faunal and plant macrofossil analyses, and obsidian hydration and sourcing, which were outsourced to specialists. Archaeological materials were made available for post-fieldwork analyses through a loan agreement between California State Parks, the National Park Service and the University of California, Davis, Department of Anthropology.

Artifacts were brush-cleaned with water, except for fragile items such as nutshell and faunal remains, which were kept dry and gently cleaned with a small brush, when appropriate. Excavated artifacts were organized by site, unit, level, and/or house number. Artifacts were placed in four-millimeter archival quality bags and tagged with all provenience information. All data was entered into a Microsoft Excel database following the established catalog format.

All collections, including artifacts, photographs, and other appropriate documentation, were delivered to the National Park Service (Orick, California) and California State Parks (Sacramento) curation facilities, as appropriate. Collections derived from sites on California State Parks property are associated with Accession Number P1321, while collections derived from sites on National Park Service lands are associated with Accession Number REDW-00282. The Tolowa indicated that they would like to see the collection managed in the local area, and other parties have agreed that it may be appropriate to house the entire collection together in Orick or in the future at a facility managed by the Tolowa community.

Chapter 4: Archaeological Sites and Fieldwork

The archaeological data summarized in this monograph were collected from six sites along the Smith River in Jedediah Smith State Park and the Hiouchi Flat area of Redwood National and State Park. Sites include the ethnographic Tolowa village of Red Elderberry Place (CA-DNO-26), CA-DNO-332, -333, -334, -339, and -XX13. The sites are within the Riverine (Redwood Belt) environmental zone (see Chapter 2) on the eastern edge of the coastal rainforest, approximately nine air miles from the Pacific coast in the foothills of the Klamath Mountains.

The study sites are situated on high, flat terraces above the flood zone facing the salmon-rich Smith River, ideal locations for long-term habitation. In a geoarchaeological study of the area, Meyer (2008) identified "six major landforms and a distinct terrace sequence" and determined that archaeological sites are located mostly on Late Pleistocene to Holocene stream terraces. Before being logged, the sites were in "park like" old growth redwood forest, with little understory except for ferns.

Most of the sites are currently covered by a dense forest of second growth redwood, Douglas fir, bay, and tan oak trees, with an understory dominated by poison oak and sword ferns. The remnants of primary old growth Redwood forest are mostly limited to site CA-DNO-334, although some large redwood trees are located in other sites close to the river. Thick vegetation obscures the ground surface so that artifacts are rarely visible. Historic-period plantings (e.g., fruit trees and lilies) also influence current site vegetation and are associated with privately owned twentieth-century homes and gardens once located at or near CA-DNO-26, -332, and -XX13; with the Catching ranch (1870s-1920) between Hiouchi and CA-DNO-26; and the Zopfi homestead (1910-) near CA-DNO-26 and -XX13. The National Park Service razed most of the associated structures in the last 20-30 years.

Due to thick forest duff and dense vegetation (sword fern, blackberries, and poison oak are widespread), ground surface visibility is low. Local climate is influenced by moist and foggy maritime conditions, though it is generally warmer and drier than at lower elevations along the coast.

FIELDWORK SUMMARY

No prior subsurface studies have been completed in the area, and of

the sites described here, CA-DNO-26 was the only site that had been previously recorded. The recorded portion of CA-DNO-26 was limited to the southeastern-most section of the site, which is associated with the ethnographically recorded Contact Period occupation of Red Elderberry village. Due to poor surface visibility and the potential for buried deposits, particularly in alluvium adjacent to the river, auger testing was determined to be the best method of site survey and led to the delineation of CA-DNO-26 and discovery of the additional five sites described here. Sites CA-DNO-26, -333, and -334 have been variously impacted by campground-related activity and infrastructure since the campground's opening in 1929. Visibility is marginally better in highly trafficked areas such as campsites and trails, though even in these areas forest duff still obscures most surface artifacts and features.

A systematic regimen of auger and shovel testing (n=848) and surface survey (where possible) was conducted over the course of several 3-7-day field visits with volunteer crews, and during three UC Davis archaeological field schools between 2003 and 2005 (Figure 13). Fieldwork included boundary delineation of the five previously unrecorded sites and CA-DNO-26. Auger testing methods, fieldwork, and findings summarized here are fully reported in Tushingham (2006).

Unit excavation was conducted at CA-DNO-26 and -333 during two UC Davis archaeological field schools in 2003 and 2004. Thirty-one units were excavated at CA-DNO-26, and four units were excavated at CA-DNO-333, representing approximately 84 cubic meters of excavated soil. Units ranged from 1 x 1 to 1 x 8 meters in size, although the majority of the units were 1 x 2 meters in size. Five semi-subterranean houses were tested, accounting for 24 of the excavated units. The remaining 11 general midden units were 1-x-2-meter exposures excavated outside of housepit depressions, and distributed throughout the

Figure 13. UC Davis Archaeological Field School, 2004.

site to gain an understanding of inter-site variability. Unit excavation methods and site descriptions of CA-DNO-26 and -333 are summarized here. For detailed descriptions of excavated houses and features and of the assemblage of these sites, see Tushingham (2009).

Additional auger testing (n=32) and excavation of 11.8 cubic meters of soil was conducted at sites CA-DNO-332, -334, and -XX13 in 2006 during a Far Western Anthropological Research Group, Inc., project (Tushingham et al. 2008). An in-depth geoarchaeological study addressing the history of landforms and potential for buried sites in the area was completed in tandem with this project (Meyer 2008). Excavation and assemblage data for these sites are summarized here (for more detail, see Tushingham et al. 2008).

There are at least nine depressions at CA-DNO-26 and four at CA-DNO-332. All are round to ovoid in shape and measure between four and eight meters in diameter. Prior to excavation, it was not clear whether they represented houses or modern or natural features such as tree fall. In many cases the depressions were barely visible, being filled with thick forest duff, trees, and other vegetation. Five of the depressions were tested at CA-DNO-26 (Houses 1-4) and one at CA-DNO-333 (House 5). All were found to contain the remains of semi-subterranean houses which closely resemble those recorded in the ethnographic record. A circular depression was identified as a possible house pit feature at CA-DNO-334. However, no cultural features were encountered during testing (at Unit 1), so the depression may be associated with the root ball of a fallen tree. Many depressions were also observed at CA-DNO-332, but poor surface visibility and other factors made their delineation difficult.

ARCHAEOLOGICAL SITES

Red Elderberry (CA-DNO-26)

Site CA-DNO-26 is a large habitation site (360 meters north-south by 100 meters east-west) on the north bank of the Smith River associated with the ethnographic Tolowa village of *Chvn-su'lh-dvn*, Athabascan for Red Elderberry Place or Salmonberry Place (Loren Bommelyn, personal communication; Drucker 1937). Ethnographic records of *Chvn-su'lh-dvn* are scant, although according to Drucker (1937), the site had two houses and a sweathouse and was a suburb of *Tatatun*, a major village site located in present-day Crescent City (Drucker 1937). Additional ethnographic data on the site are detailed in Chapter 5.

Previous Research

Although no prior subsurface investigations have been completed at CA-DNO-26, several archaeologists have previously visited and/or described the site. In the late 1960s, Richard Gould visited several interior Tolowa sites, including CA-DNO-26. He collected approximately 100 artifacts from the surface, and the resulting collection is housed at the American Museum of Natural History in New York City. Eric Ritter surveyed and completed the first site record for CA-DNO-26 (Ritter 1969a), in which the site is described as a major village with dark midden measuring approximately 50 meters north-south by 100 meters east-west, with a depth of more than one meter. Observed features included a "Chinese miner's trench," a rock pile, and a "ceremonial pit" in a clearing at the east side of the site hypothesized to be a "possible religious area in which Indians tossed rocks into a pit as an offering" (Ritter 1969a). Two possible 50-centimeter-deep house pit depressions are described in Ritter's notes, one circular (six meters in diameter) and one oval (~6 x 10 meters). Ritter interviewed a local man, Mr. Sawyer, who indicated that he collected 20

points, retouched flakes, pieces of ocean shell, scrapers, debitage, hammerstones, and core tools from the surface at CA-DNO-26. Sawyer noted "that a Mr. Zofti [Zopfi] lived near the site. Zofti [Zopfi] told him the last Indian (a renegade) lived on the site around 1902. He was chased into the forest and shot by local white residents" (Ritter 1969a).

Despite the lack of subsurface investigations, the scientific importance of CA-DNO-26 was apparent to earlier researchers. In an overview of sites in Redwood National Park Michael Moratto states:

> The archaeological remains would appear to be of exceptional scientific value. The apparent site of *Tcunsu'ltun* seems to be the *only* midden site within Jedediah Smith Redwoods State Park. Furthermore, this is the only reasonably intact inland archaeological site known to exist within the proposed boundaries of Redwood National Park. [Moratto 1973:90-91]

Moratto's significance determination was based on his observation of "rich black midden" and many artifacts observable on the surface including marine shell scrapers, net sinkers, hammerstones, nineteenth-century bottle glass, and numerous worked flakes of chert and obsidian. Site dimensions at the time were estimated at 200 meters east-west by 50 meters north-south, with a depth of at least 90 centimeters. At least two possible "subrectangular" housepits measuring approximately 10 x 15 feet were noted.

Based on information provided by previous surveys, ethnography, and interviews with Tolowa consultants, a National Register of Historic Places nomination was completed for CA-DNO-26 (Bickel 1979). The nomination notes that Tolowa consultants were interviewed in 1978 and 1979 but had no knowledge about which families once lived on the site. They "readily supplied the name *Chvn-su'lh-dvn* (said to mean "elderberry place;" cf. Drucker's "pigeonberry place") for the location. Some said that it was once a village; others said, just a place used by people [presumably for fishing or gathering berries or other vegetal foods]" (Bickel 1979:2). Chert cores, flake tools, and debitage were observed on the surface of the site, and it is noted that the interviewed Tolowa consultants had no knowledge of the location of the cemetery. Intensive survey and subsurface testing (auger borings and possibly excavation) was recommended to determine the nature, depth, and integrity of site boundaries; the extent of campground damage to the site; and whether "the observable pits in the site may be related to recent campground use, rather than earlier Tolowa occupation" (Bickel 1979).

In 1982, Hood and McAleer revised the site record for CA-DNO-26. The site was determined to be larger than any of the previous surveys indicated: 260 meters east-west by 100 meters north-south. Handstone fragments, fire-cracked rock, and a total of six to eight probable house pit depressions were observed in a survey of the site.

Fieldwork Summary

Systematic auger and shovel testing was conducted in the winter and spring of 2003 and during three UC Davis archaeological field schools held in the summers of 2003, 2004, and 2005. The boundaries of site CA-DNO-26 were mapped via the presence of 66 positive tests, including 56 auger tests, seven shovel tests, and three surface artifact locations. A total of 588 artifacts was recovered in these tests (Tushingham 2006). Soil conditions vary considerably within the site, from sandy alluvium along the Smith River in the site's southwestern section, to rocky, deflated soils in the northeastern section of the site. The

maximum depth auger tests were dug varied accordingly; while it was possible to excavate some auger tests only to a maximum of 20 centimeters or less, auger tests adjacent to the river in the western section of the site extended as deep as 540 centimeters below surface. Evidence for buried cultural deposits is clustered along the low-lying alluvium covered area, with multiple auger tests producing buried cultural materials beneath 20-120 centimeters of sandy alluvium. The maximum depth of the artifacts that were recovered via auger testing was in this area of the site, at 220 centimeters below surface.

Unit excavation took place during the 2003 and 2004 archaeological field schools and included the excavation of 31 units, including eight general excavation units and 23 units placed in houses (Table 5).

Table 5. CA-DNO-26 Unit Excavation Summary.

Unit	Unit Size (meters)	Max. Depth Excavated (cm)	Cultural Constituents
General Midden Units			
A	1 x 2	80	Early period midden (20-80 cmbs)
B	1 x 2	150	Stratified Early/Middle/Late Period deposit
C	1 x 2	150	Early period midden (60-100 cmbs)
D	1 x 2	150	Late Period midden above Middle Period living surface, hearth, midden, and ground stone feature (50-100 cmbs)
E	1 x 2	150	Middle Period midden (20-150 cmbs)
H	1 x 2	150	Early/Middle/Late Period deposits
P	1 x 2	174	Stratified Early/Middle/Late Period deposit
Q	1 x 2	188	Stratified Middle/Late Period deposit
House 1			
FS/FN	1 x 8	158	Late Period semi-subterranean house with packed clay floor, burned upright planks. Mixed Late/Middle Period and intact Middle Period deposits before house floor
Y	1 x 2	108	
House 2			
AA	1 x 4	120	Semi-subterranean house with packed clay floor, linear stone alignment. Late and Middle Period deposits
House 3			
I	1 x 2	160	Late Period semi-subterranean house with blue clay floor, shelf, food caches, abundant net sinkers, harpoon tips, salmon bone
ZN	1 x 2	136	
ZW	1 x 1	112	
Z	1 x 2	161	
House 4			
GN	1 x 2	62	Heavily burned Contact Period semi-subterranean sweathouse with interior paved area, slab-lined hearth, upright planks, plank floor. Assemblage similar to that of Late Prehistoric House 3, with addition of historic materials.
GS	1 x 2	62	
J	1 x 2	65	
K	1 x 2	60	
R	1 x 2	80	
S	1 x 2	80	
T	1 x 3	92	
U	1 x 3	74	
V	1 x 2	115	
W	1 x 1	39	
X	1 x 2	113	
BB	1 x 3	60	

In a geoarchaeological study of the area, Meyer (2008) identified two major landforms at CA-DNO-26. The upper part of the site is located on a Latest Pleistocene strath terrace (a type of terrace that is the result of stream downcutting through bedrock) at an average elevation of 136 feet above mean sea level. This terrace is estimated to be 19,000-11,500 years old and is "likely associated with deglaciation of the Upper Klamath Mountains, which eventually led to reduced runoff, concentrated flows, and channel incision. Thus, the sediments that now form this terrace have remained relatively stable over much of the time people occupied the region" (Meyer 2008:21). This terrace was probably not submerged during the major flood of 1964, which inundated many parts of Del Norte County and lower sections of the project area.

Very dark midden soil and high artifact densities are characteristic of this upper terrace area. At least nine circular depressions are laid out in a single row along the highest sections of the terrace. Four of these were tested; all were determined to be the remains of semi-subterranean houses of varying age. Houses 1-3 date to the Late Period, while recovered historic-era (Contact Period) artifacts are clustered in the easternmost section of the site near an excavated sweathouse (House 4) dating to the mid to late 1800s. The earliest radiocarbon date obtained from deposits on this terrace is 3953 cal BP (CAMS-114838) in the lower levels of Unit FN (below House 1; see Table 11 on page 64). However, consistently thick obsidian hydration readings suggest there are very old archaeological deposits on the terrace, which could be confirmed through additional radiocarbon dating.

The lower (river-side) portion of the site is located on a second landform identified by Meyer (2008) as a Late Holocene terrace estimated to be less than 800 years old. This landform covers buried A Horizon deposits dating from the Early to Middle Holocene. The terrace averages 112 feet above mean sea level and likely was covered in 1.5-6.5 feet of water during the 1964 flood. Auger testing along the river bar revealed deeply buried artifacts (up to 220 centimeters below surface), which were capped by 20-120 centimeters of fine-grained sandy alluvium. Additionally, 90% of auger-recovered artifacts were found 40 centimeters or more below surface on this terrace, while on the upper Late Pleistocene terrace, only 55% were found below 40 centimeters (Meyer 2008). As many as three formerly stable A Horizon deposits dating to the Early to Middle Holocene are buried beneath the younger alluvial deposits (Meyer 2008). Consistently thick obsidian hydration readings and Early to Middle Holocene AMS dates at Unit B support this finding. The Middle Holocene dates from Unit B include the following: 3614 cal BP (PRI-07-146-573), 7510 cal BP (NOS-57448), 7806 cal BP (PRI-07-146-571), and 8072 cal BP (PRI-07-146-576; see Table 11 on page 64).

The site is surrounded on all non-river-facing sides by characteristically gravelly, shallow soils with no artifacts identified in auger tests. Similar gravelly soils were encountered in other parts of the project area, including a large area between CA-DNO-332, -26, and -XX13. Typically devoid of cultural materials, such areas appear to be the result of past fluvial activity (Meyer 2008).

Assemblage and Chronology

Through excavation and testing at CA-DNO-26, three temporally significant components have been defined, with distinct assemblages, features, and patterns of raw material use and procurement. This chronological sequence represents more than 8,000 years of human occupation, and is supported by the presence of temporally diagnostic

projectile points, radiometric (AMS) dates of charred nuts and seeds, and obsidian hydration analyses.

Excavated artifacts include a wide variety of prehistoric and protohistoric artifacts (obsidian, chert and basalt flakes, flake tools, projectile points, steatite and clay pipes, ground stone, cores, core tools, cobble tools, steatite and *Olivella* shell beads, pendants, mammal, fish and bird bone, shell, glass and metal artifacts, fire-cracked rock, and charcoal). Artifacts from the two main study sites, CA-DNO-26 and -333, contained the most intact deposits of the project sites; assemblage data separated into component are presented ahead in Table 12 through Table 14 starting on page 66.

Twenty AMS dates were obtained from CA-DNO-26 unit excavations (see Table 11 on page 64). Of these, six are from house floor or feature contexts, while the remainder are from general midden contexts. Projectile points dating to the Early Period include large to medium foliates which are similar to those recorded for Glade Pattern sites in southwest Oregon. Points associated with the Mendocino or Middle Period include Trinity series points, Mendocino Corner Notched, Squaw Creek Contracting Stemmed, and McKee Unifaces. Late Period projectiles were the most numerous, particularly Gunther barbed and Gunther variant points. Other common Late Period styles include concave-based (harpoon) tips and flake projectile points, the latter of which were found (via excavation and obsidian hydration analysis) to be a marker for the time period. Finally, Desert Side Notched points were rare but present in terminal Late Period and Contact Period contexts.

In sum, site CA-DNO-26 is associated with the ethnographic village of *Chvn-su'lh-dvn*. Excavations revealed an extremely long chronological sequence ranging from earlier than 8000 cal BP to the Contact Period. The remains of four semi-subterranean plank houses were excavated at the site and include the earliest well-dated houses of their kind (House 1, with a mean pooled radiocarbon age of cal 1267 BP) and the only excavated plank sweathouse recorded in the region.

CA-DNO-333

Site CA-DNO-333 is a large prehistoric site (250 meters north-south by 150 meters east-west) located on a high terrace above the Smith River. CA-DNO-333 is located on the same stable Late Pleistocene terrace as the upper part of CA-DNO-26 (Meyer 2008). The site is not mentioned in the ethnography, and interviewed Tolowa consultants had no knowledge of this specific location. However, the presence of an archaeological site in this location was suspected for several reasons. First, site setting is quite similar to that of CA-DNO-26—both areas are ideal locations for a village, as they provided ready access to the salmon-rich, fresh-water Smith River, and are situated on high, flat terraces. Second, three depressions similar to confirmed housepit depressions were observed clustered along a terrace in the central section of the site. Third, a bowl mortar and pestle were discovered in the immediate area by Redwood National and State Parks maintenance staff in the 1980s.

Fieldwork Summary

The presence of an archaeological site was confirmed via auger testing in the summer of 2003, and final boundary delineation took place at the site in the summer of 2004 and 2005. A total of 72 artifacts was recovered from 34 positive auger tests and at two surface artifact locations (Tushingham 2006). A total of four 1-x-2-meter units was excavated at CA-DNO-333 during the 2004 UC Davis field school (Table 6).

Table 6. CA-DNO-333 Unit Excavation Summary.

Unit	Unit Size (meters)	Max. Depth Excavated (cm)	Cultural Constituents
General Midden Units			
L	1 x 2	150	Middle period deposit (30-130 cmbs), lithic work area feature.
M	1 x 2	150	Stratified Late and Middle Period deposit. Two stratigraphically distinct slab-lined hearths.
O	1 x 2	150	Stratified Late and Middle Period deposit.
House 5			
N	1 x 2	161	Heavily burned Late Period semi-subterranean house, with trenches, posts and planks. Middle Period deposit below floor.

Soil conditions vary considerably within the site. Though sandy alluvium is present along some river-facing sections, unlike CA-DNO-26, buried cultural deposits were not encountered during auger testing or unit excavation. Deep, dark midden soils with high artifact frequencies are typical of the central and river-facing sections of the site, while rocky deflated soils were encountered near non-river facing site boundaries. The maximum depth of auger-tested artifacts were discovered in this area, at 140 centimeters below surface.

Also located in this central midden area are four 3-5-meter diameter depressions that are similar to confirmed semi-subterranean houses at CA-DNO-26. Unit N excavations (see Table 5) confirmed that one of these depressions was a Late Period semi-subterranean house (House 5). Spatial patterning of suspected house pit depressions is not as clear as at CA-DNO-26. Although three depressions are clustered along the river terrace, the only tested depression (House 5) is set back approximately 50 meters from this cluster, and no other depressions are visible near House 5. The immediate area is heavily impacted by campground activity and roads through the park, so if house depressions existed they may be no longer visible on the landscape. Other excavated features include two stratigraphically distinct Late Period slab-lined hearths discovered in Unit M near the three suspected housepit depressions, and a lithic work area consisting of a dense concentration of chert cores, choppers, battered cobbles, and debitage in Unit L dating to the Middle Period.

Very gravelly shallow soils devoid of cultural material surround the south and southwestern boundaries of the site and extend to the northern boundaries of CA-DNO-26. Similar off-site gravelly soils were encountered in other parts of the project area, including a large area between CA-DNO-332, -26, and -XX13.

Assemblage and Chronology

Three temporally significant components (Early, Middle, and Late Period) were encountered at CA-DNO-333. Cultural constituents include a wide variety of prehistoric artifacts (obsidian, chert and basalt flakes, flake tools, cores, core tools, projectile points, ground stone, animal bone, fire-cracked rock, and charcoal). No protohistoric artifacts were recovered at the site. Artifacts from the two main study sites, CA-DNO-26 and -333, contained the most intact deposits of the project sites; assemblage data separated into component are presented in Table 12 through Table 14 starting on page 66.

Two AMS dates were obtained from site CA-DNO-333 (Table 11 on page 64). The first (CAMS# 114831) was a small piece of burnt nut seed from Unit M, Level 7. It was located in midden between two stratigraphically distinct slab-lined hearths which were

located above and below Level 7. The sample produced a conventional date of 815 ± 35 BP and a calibrated date range of 679-786 BP. The second was obtained from a charcoal sample from House 5, Unit N, which dates to 420 ± 30 BP. The sample produced two calibrated date ranges: 333-351 BP and 435-523 BP.

Several distinct projectile point styles were recovered during unit excavation, including a large serrated Glade foliate, Mendocino Corner Notched points dated to the Middle Period, and Late Period Gunther barbed and Gunther variant points.

CA-DNO-332

Site CA-DNO-332 is an extensive (100-x-680-meter) prehistoric and historic period site located on a high terrace overlooking the north side of the Smith River. The relatively high elevation of the terrace indicates that the site has historically been protected from seasonal flooding of the river. Tolowa consultants report that native people lived in this area until around 1910; Richard Brooks had always heard that a historic-period village was located behind the fire station, an area in the eastern section of CA-DNO-332. This is corroborated by archival data (detailed in Chapter 5) which demonstrates that a large Indian-white family, the Catchings, lived on the flat by the 1870s. Their homestead encompassed approximately 270 acres in the area, and their home was located in the direct vicinity of the firehouse (now on National Park Service property). Later-dating homes and summer cottages were constructed on the site mostly after the 1940s. The National Park Service acquired these private parcels and razed most of the associated structures during the past 20 to 30 years. However, old fence lines, house foundations, water ditches, and historic period garden plantings and fruit trees remain scattered throughout the site.

Previous Research

In a corridor survey of US Highway 199, King (1972:11) assigned the site area "recently purchased by the National Park Service" as the location of the village of *Chvn-su'lh-dvn* (CA-DNO-26). Residents in the early 1970s told King that an "Indian structure" was once located in the area. King observed dark midden soil and shell on the surface of the area and concluded that the site was probably mostly historic, as he only identified old bottle glass in exposed surfaces (gopher holes). Ethnographic evidence (e.g., Drucker 1937), previous archaeological studies, and Tolowa oral histories all confirm that *Chvn-su'lh-dvn* was located to the west of this site in historic times; although the current site boundaries of CA-DNO-333 and -26 are separated by 90 meters, if and how the sites were connected in the past remains unclear.

In 1973, in an archaeological overview for RNP, Michael Moratto addresses the issue:

> It seems clear that the north bank of Smith River in this area was extensively utilized by the Indians. Although it is probable that the site described by King is merely the periphery of the midden discussed above [CA-DNO-26], the ascription of the name *Tcuncu'ltun* to either site (or to both of them collectively) would seem reasonable. It may be, in fact, that the "two" sites merely reflect settlements by the same community at different times. [Moratto 1973:90]

Fieldwork Summary

Archaeological fieldwork at the site began in the spring of 2003 when the site was discovered by a team of UC Davis volunteers. UC Davis archaeologists returned to the site during the 2005 summer field school. In all, 270 artifacts were recovered on the surface and from 85 auger tests (Tushingham 2006).

Investigations during the 2007 Far Western project included subsurface excavation of two 1-x-2-meter units and two 1-x-1-meter units (Table 7). Twenty-two auger tests were also excavated to complete site boundary delineation and mapping. Unit excavations were conducted in two areas. Exposure 1 was placed toward the western end of the site, away from the terrace edge, where the 2003 and 2005 auger yields were relatively high. Exposure 2 was placed along the terrace edge toward the eastern end of the site. At both exposures, excavations began with a 1-x-2-meter unit followed by a 1-x-1-meter extension. These efforts resulted in the excavation of 9.0 cubic meters of soil.

The subsurface structure of CA-DNO-332 varies from shallow rocky and gravelly soils at site margins, to deep midden soils with high artifact frequencies in the central two-thirds of the deposit. Several depressions were observed at the site which may represent house pits. However, any clustering or linear layout of the depressions was not clearly visible. Due to poor surface visibility and time constraints, it was difficult to properly evaluate these depressions.

Table 7. CA-DNO-332 Unit Excavation Summary.

Unit	Unit Size (m)	Maximum Depth (cm)	Cultural Constituents
Exposure 1			
1	1 x 2	160	Mixed Early and Middle Period deposit, living surface & Oregon Series point at 90-100 cmbs.
1A	1 x 1	160	Mixed Early and Middle Period deposit.
Exposure 2			
2	2 x 1	150	Mixed Early and Middle Period Deposit, some Late Period constituents.
3	1 x 1	120	

Assemblage and Chronology

The artifact assemblage at CA-DNO-332 is composed almost entirely of flaked stone tools, including 56 flake tools, 15 bifaces, seven formed flake tools, three cobble tools, two projectile points, one core tool, and more than 4,500 pieces of debitage (Table 8). Ground and battered stone implements are completely absent, and the remainder of the collection includes a single tarring pebble, a drilled stone disk (see Figure 16 on page 69), and an unusual piece of red clay.

Analysis of flaked stone tools indicates that people arrived at the site with finished tools made from obsidian and cryptocrystalline silicate that were refurbished during their stays. Some tool manufacturing also occurred, particularly simple flake tools and bifaces made from cryptocrystalline silicate, and more heavy-duty tools made from local toolstones such as greywacke. A relatively high percentage of obsidian debitage (62.0% overall) was recovered at the site, including material from both Medicine Lake Highlands and Spodue Mountain, indicating that people were actively involved in a system of inter-regional exchange.

Table 8. CA-DNO-332 Artifact Inventory.

	TOTAL	EXPOSURE 1	EXPOSURE 2
Flaked Stone			
Projectile Points	2	1	1
Bifaces	15	2	13
Formed Flake Tools	7	1	6
Flake Tools	56	23	33
Core Tools	1	1	-
Cobble Tools	3	2	1
Debitage	4,503	1,401	3,102
Miscellaneous Items			
Tarring Stone	1	1	-
Modified Stone	1	1	-
Red Clay	1	-	1
Total	4,590	1,433	3,157

Notes: Data from Tushingham et al. (2008:35).

Radiocarbon dates, obsidian hydration data, and a single time-sensitive projectile point indicate that both exposures at CA-DNO-332 are associated with occupations that correspond to the Borax Lake (8000-3500 BP) and Mendocino (3500-1500 BP) patterns. Exposure 2 also contained a limited amount of material corresponding to the earliest end of Gunther Pattern time (roughly 1500-700 BP).

Six radiocarbon dates were obtained during excavation, three from Exposure 1 and three from Exposure 2 (see Table 11 on page 64). Unfortunately, radiocarbon dates in both exposures were stratigraphically mixed. For example, Exposure 1 produced the oldest date of 8875 cal BP (80-90 centimeters), while deeper depths produced dates of 2222 cal BP (100-110 centimeters) and 5838 cal BP (150-160 centimeters). It is difficult to understand the stratigraphic positioning of the dates, but given the large trees and roots within this location, it is possible that the sediments could have been reworked by tree falls, rodent borrowing, or other natural or anthropogenic disturbances. A similar situation was encountered at Exposure 2—the oldest radiocarbon date of 3235 cal BP was from a sample found at 50-60 centimeters, while others dated later but were found in lower stratum (711 cal BP from 70-80 centimeters, and 766 cal BP from 100-110 centimeters). Again, some sort of turbation must have occurred at this location, creating the inverse stratigraphy evidenced by the dates.

A chert Oregon series projectile point fragment is the only definitive time-sensitive artifact collected from the site (see Figure 16 on page 69). It was found at a depth of 90-100 centimeters in Unit 1 in the same level as a possible living surface. Similar large serrated lanceolates from Pilot Ridge sites were termed "Oregon series" points by Hildebrandt and Hayes (1983, 1993). Though they lacked a datable assemblage, as observed by Greg White (personal communication), the points are identical to those found at sites along the Rogue and Applegate Rivers in southeastern Oregon. At the well-dated Marial site (35CU84), they are commonly found in deposits dating to between 5500 and 2500 cal BP, with a peak at 4000 BP. Unfortunately, Unit 1 radiocarbon dates are mixed: 2222 cal BP (100-110

centimeters); 5838 cal BP (150-160 centimeters); 8875 cal BP (80-90 centimeters; see Table 11 on page 64).

Despite the great time depth of site CA-DNO-332 spanning more than 8,500 years, it is impossible to sort the findings into discrete components. While chronological resolution of the site at this point is poor, site CA-DNO-332 remains one the oldest riverine archaeological deposits in northwestern California, and intact cultural deposits may still exist at the site.

CA-DNO-334

Site CA-DNO-334 is a relatively large (220-x-200-meter) prehistoric site located on a low terrace just above the Smith River in the northern Day Use Area of Jedediah Smith Campground. Two Smith River Rancheria Tribal members and contributors to the project shared knowledge of this site in interviews conducted with the author. Richard Brooks had heard that there was a village in this location, but thought it could have been located closer to US 199. Additionally, Loren Bommelyn had heard his aunt speak of this area, possibly as a village or fishing camp location. The site is near the ethnographic salmon fishing site of *tum-chaa-me'* and may represent an associated camp or small village. For additional ethnographic information on *tum-chaa-me',* see Chapter 5.

Fieldwork Summary

The site was originally discovered during systematic auger testing conducted during the 2003 UC Davis summer field school. Additional testing and boundary delineation took place at the site in the summer of 2005. These investigations encountered a low density of material (n=32 artifacts) in 15 auger tests and in the exposed root ball of a fallen tree.

Unit excavation at the site was conducted during the 2007 Far Western study (Tushingham et al. 2008); three 1-x-2-meter units were dug at CA-DNO-334, resulting in the excavation of 1.8 cubic meters of deposit (Table 9). Two shallow circular depressions were recorded as possible house pits; Unit 1 was placed within one of these to determine its nature. The unit was excavated to a depth of 40 centimeters and revealed no evidence of a house structure; it produced only one biface and an unworked spall of chert. Unit 2 was placed on the east side of the site and revealed a very low density of material to a depth of 40 centimeters. Finally, Unit 3 was placed closer to the center of the site and yielded only four pieces of debitage to a depth of ten centimeters.

Table 9. CA-DNO-334 Unit Excavation Summary.

	Depth (cm)	Cultural Constituents
Unit 1 (1 x 2 m)	40	
Unit 2 (1 x 2 m)	40	Late Period dating lithic scatter.
Unit 3 (1 x 2 m)	10	

Assemblage and Chronology

Excavations at CA-DNO-334 yielded a low density, ephemeral scatter of flaked stone tools and debitage. The artifact inventory generated from the three units at CA-DNO-334 is limited to two bifaces, two flake tools, 60 pieces of debitage, and a single piece of faunal bone. Most of the debitage (n=51) is cryptocrystalline silicate, eight are obsidian, and

one is quartz. The vast majority of this material is from Unit 2 (n=53), while only six pieces were found in Unit 3 and one piece in Unit 1. While the sample size is small and all conclusions based upon it tentative, it would appear that most lithic activities were focused on the earlier stages of stone tool manufacture of bifaces, such as shaping and thinning, rather than the finishing and maintenance of tools. However, with such light densities of debitage, these manufacturing events must have been sporadic.

While no time-sensitive artifacts were discovered at the site, obsidian hydration data on a small sample of artifacts (n=8) indicate that site occupation dates primarily to the Late Period, between 1533 and 895 BP. Given the narrow character of the assemblage, site inhabitants appear to have been largely invested in flaked stone manufacture and maintenance, probably with the ultimate goal of hunting deer, elk, and other prey species living in the area. The site is near the ethnographically recorded fishing site of *tum-chaa-me'*, and although no direct evidence of fishing was recovered during site excavations, it is probable that the original inhabitants camped at this flat to seasonally exploit salmon.

CA-DNO-XX13

Site CA-DNO-XX13 is a small (30-x-60-meter) lithic scatter located on an ancient terrace more than 500 meters away from the Smith River. It lies just south of US 199, across the road from the Hiouchi Visitor's Center. The northern portion of CA-DNO-XX13 is covered with young evergreen trees and opens to a grass-covered field to the south. Ranching and farming activities took place in this open area from the late 1800s to the mid-twentieth century. Such activities, along with fire management, helped keep the area clear of vegetation throughout the historic period.

Fieldwork Summary

Site boundaries were established via the discovery of nine surface artifacts and ten artifacts recovered from six auger tests in the summer of 2005 (Tushingham 2009). Later fieldwork included the excavation of a single 1-x-2-meter unit (Unit 1) to a depth of 50 centimeters, resulting in the processing of one cubic meter of deposit (Table 10; Tushingham et al. 2008). Site CA-DNO-XX13 is located on a secondary terrace above the Smith River, which seems to represent an older remnant terrace (Meyer 2008). A large open area with shallow, gravelly soils is located directly south of the site and terrace, and there is a discernible decrease in elevation between the site and this open area. Though auger tests were conducted, no artifacts were discovered in this lower open area.

One backhoe trench was also excavated near the margins of the site to assess the geomorphic character of the larger Hiouchi Flat area (Meyer 2008). This study exposed a stratigraphic profile overlaying a layer of river-worn boulders and cobbles that represent an ancient Pleistocene terrace of the Smith River. The age of the underlying boulder/cobble layer indicates that this rather old soil could hold archaeological materials dating from throughout the Holocene.

Table 10. CA-DNO-XX13 Unit Excavation Summary.

	Depth (cm)	Cultural Constituents
Unit 1 (1 x 2 m)	40	Early Period deposit. Low-density scatter of flaked stone tools and debitage.

Assemblage and Chronology

Excavations at CA-DNO-XX13 yielded a low-density scatter of flaked stone tools and debitage. The assemblage includes 75 flaked stone items, including four bifaces, one formed flake tool, two cores, and 68 pieces of debitage. Three of the artifacts—one core and two pieces of debitage—were recovered during the excavation of the geoarchaeological trench.

While no temporally diagnostic artifacts were recovered at the site, a small sample of obsidian (n=10) was submitted for source determination and hydration analysis. The sample produced very thick hydration bands and a high level of obsidian source diversity. Medicine Lake obsidian hydration data on a sample of six artifacts clustered around a mean of 6.0 microns, which converts to an age range of 8221 to 5187 BP, indicating a site occupation during the early Borax Lake Pattern.

These materials probably reflect people using the area on a short-term basis, creating a rather ephemeral archaeological record linked to the production and maintenance of flaked stone tools. The obsidian hydration age estimate corresponds to the early Borax Lake Pattern, indicating that the site represents one of the oldest riverine components in northwestern California.

CA-DNO-339

Site CA-DNO-339 is a sparse scatter of flaked stone and fire-cracked rock, which is in need of boundary testing and further description. The site is on the south bank of the Smith River at an elevation of 100 meters above sea level, on a terrace above Mill Creek (a tributary of the Smith River). It is located on the Stout Grove Trail which meanders through a dense section of old growth redwood forest. On-site vegetation also includes madrone, alder, and fern. Ethnographically, this section of Mill Creek and the Smith River provided an excellent source of salmon for local Tolowa Indians: a village, seasonal camps, a fish trap, and weir sites are all known to be in the immediate vicinity.

Site CA-DNO-339 was discovered by a UC Davis archaeological field school student while hiking on the Stout Grove trail within Tolowa Redwood National and State Park in the summer of 2004. Time constraints did not allow for an in-depth investigation of the site, though the scatter was mapped and the area west of the site to Mill Creek was briefly surveyed.

Assemblage and Chronology

Two artifacts, an obsidian Gunther Barbed point and a use-modified chert flake, were discovered and collected. Fire-cracked rock was observed at the site but not collected. One circular depression near Mill Creek could possibly be a housepit, but due to dense vegetation, this could not be confirmed. The collected Gunther Barbed point is diagnostic of the Late Prehistoric Period (1500 BP-1850 AD) in northern California and southwestern Oregon. Hence, CA-DNO-339 is tentatively classified as a Late Prehistoric site, although future fieldwork may recover evidence of earlier or later site constituents.

Site CA-DNO-339 may be associated with one of the salmon fishing camps described ethnographically in this section of Mill Creek, in particular of the ethnographically recorded fish camp site *Shaa-xu'-me*, which was located in this area (see Chapter 6: *Ethnographic and Archival Data*). At this point it is difficult to make determinations relating

to site function at CA-DNO-339 based on the limited amount of fieldwork and small number of artifacts collected.

Chapter 5: Component Summary

Through the described archaeological fieldwork, four chronological components were discovered at the five study sites, with distinct assemblages, features, and patterns of raw material use and procurement. The chronological sequence is supported by 28 radiometric (AMS) dates, 382 obsidian source determinations, 374 obsidian hydration readings, and diagnostic artifacts from archaeological deposits at these five sites.

RADIOMETRIC RESULTS

Twenty-eight AMS dates were obtained from project area sites (Table 11). Included in this table are an additional three dates obtained from geomorpholocial contexts in the immediate project area (Meyer 2008). Twenty dates were obtained from CA-DNO-26, six from CA-DNO-332, and two from CA-DNO-333. Currently this set of dates includes some of the oldest radiometric dates from any archaeological site in northwestern California, including an 8072 cal BP (PRI-070146-576) from an intact cultural layer at CA-DNO-26. An earlier date from CA-DNO-332, 8875 cal BP (NOS-64275), was from a mixed context.

OBSIDIAN HYDRATION

Hydration rim measurements were taken on 374 obsidian tools and pieces of debitage from five sites: CA-DNO-26, -332, -333, -334, and -XX13. One sourced specimen was not analyzed, and seven specimens lacked measurable hydration, either because of diffuse hydration or no visible hydration band. Twenty-seven obsidian artifacts displayed multiple hydration bands, suggesting scavenging, deliberate reworking or damage: 11 of the 51 tools (22%) and 16 of the 323 pieces of debitage (5%). A piece of debitage with two hydration bands measuring 8.51 and 24.01 microns was not included, as 24.01 is an anomalously large value, likely the result of the rim measurement being taken on natural cortex.

Obsidian frequency by microns is presented in two graphs. Figure 14 shows the distribution for California sources, mostly Lost Iron Wells (LIW) obsidian, and Figure 15 presents the distribution for Oregon sources, mostly Spodue Mountain obsidian.

Based on paired obsidian hydration readings and radiocarbon dates, and obsidian hydration readings on diagnostic artifact forms, the following micron value ranges for LIW obsidian was established for each component:

Late Period to Contact (1.0-2.7 microns), Middle Period (2.8-5.2 microns), and Early Period (>5.21 microns). Spodue Mountain obsidian hydrates slightly more slowly. Diachronic obsidian distribution patterns and sourcing are discussed in Chapter 7.

Table 11. AMS Dates from Study Area Sites and Geomorphologic Contexts.

SAMPLE ID	PROVENIENCE	MATERIAL	14C YEARS	CALIBRATED MEDIAN
Site CA-DNO-26				
PRI-07-146-6014	Unit AA 60-70 cmbs	*Pseudotsuga* charcoal	135 ± 15 BP	123 cal BP
CAMS-114829	Unit P 40-50 cmbs	Seed/nut	265 ± 35 BP	314 cal BP
PRI-07-146-765	Unit D 120-130 cmbs	*Pseudotsuga* charcoal	335 ± 15 BP	380 cal BP
PRI-07-146-568	Unit B 20-30 cmbs	*Pseudotsuga* charcoal	350 ± 20 BP	390 cal BP
PRI-07-146-771	Unit D 60-70 cmbs	*Abies* charcoal	360 ± 20 BP	432 cal BP
PRI-07-146-6076	Unit AA 80-90 cmbs	*Pseudotsuga* charcoal	395 ± 15 BP	485 cal BP
CAMS-114835	Unit FN 140-150 cmbs	Seed/nut	570 ± 40 BP	598 cal BP
PRI-07-146-1598	Unit H 60-70 cmbs	*Abies* charcoal	1100 ± 20 BP	1005 cal BP
CAMS-114828	House 3 Floor	Seed/nut	1165 ± 50 BP	1087 cal BP
CAMS-114827	House 1 Hearth	Seed/nut	1240 ± 40 BP	1179 cal BP
CAMS-114837	House 1 Floor	Seed/nut	1265 ± 35 BP	1214 cal BP
CAMS-114830	Unit P 80-90 cmbs	Seed/nut	1275 ± 35 BP	1221 cal BP
CAMS-114836	House 1 Floor	Seed/nut	1290 ± 35 BP	1232 cal BP
CAMS-114833	House 2 Floor	Wood charcoal	2290 ± 35 BP	2317 cal BP
CAMS-114832	Unit D Hearth	Seed/nut	2935 ± 45 BP	3098 cal BP
PRI-07-146-573	Unit B 90-100 cmbs	*Pseudotsuga* charcoal	3370 ± 20 BP	3614 cal BP
CAMS-114838	Unit FN 140-150 cmbs	Seed/nut	3630 ± 100 BP	3953 cal BP
NOS-57448	Unit B 120-130 cmbs	Wood charcoal	6620 ± 40 BP	7510 cal BP
PRI-07-146-571	Unit B 110-120 cmbs	*Chamaecyparis* charcoal	6970 ± 20 BP	7806 cal BP
PRI-07-146-576	Unit B 120-130 cmbs	*Pinus* charcoal	7250 ± 25 BP	8072 cal BP
Site CA-DNO-332				
PRI-08-25-175	Unit 2 70-80 cmbs	*Pseudotsuga* charcoal	800 ± 15 BP	711 cal BP
PRI-08-25-240	Unit 3 100-110 cmbs	*Pseudotsuga* charcoal	865 ± 20 BP	766 cal BP
PRI-08-25-60	Unit 1 100-110 cmbs	*Pseudotsuga* charcoal	2225 ± 15 BP	2222 cal BP
NOS-64276	Unit 2 50-60 cmbs	Manzanita stone	3040 ± 85 BP	3235 cal BP
PRI-08-25-82	Unit 1 150-160 cmbs	*Pseudotsuga* charcoal	5035 ± 15 BP	5838 cal BP
NOS-64275	Unit 1 80-90 cmbs	Manzanita stone	8020 ± 85 BP	8875 cal BP
Site CA-DNO-333				
NOS-57449	House 5 post	Wood charcoal	420 ± 30 BP	491 cal BP
CAMS-114831	Unit M 70-80 cmbs	Seed/nut	815 ± 35 BP	724 cal BP
Geomorphological Study Dates				
PRI-08-25-1	AREA 2 133 cmbs	*Picea* charcoal	6050 ± 15 BP	6910 cal BP
PRI-08-25-2	AREA 2 190-200 cmbs	Conifer charcoal	9235 ± 20 BP	10409 cal BP
PRI-08-25-3	AREA 2 375-385 cmbs	Asteraceae charcoal	9270 ± 25 BP	10460 cal BP

Notes: All dates calibrated using CALIB 5.01 calibration software.

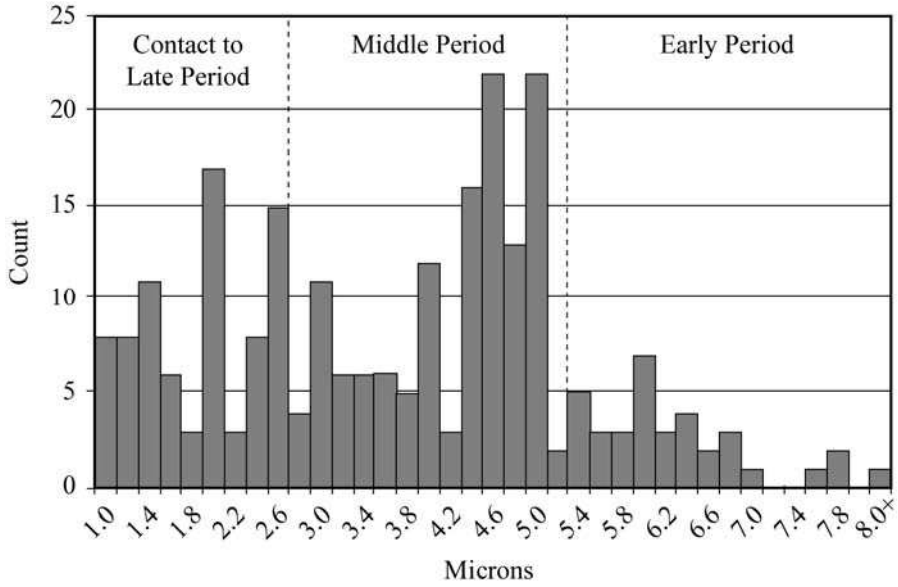


Figure 14. Cross Site Obsidian Frequency by Microns: California Sources.

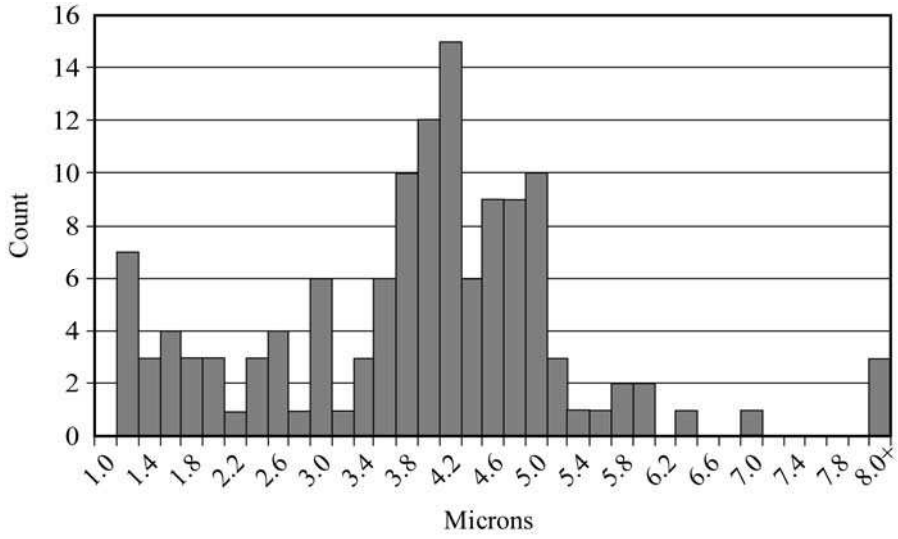


Figure 15. Cross Site Obsidian Frequency by Microns: Oregon Sources.

ASSEMBLAGE AND COMPONENT SUMMARY

Components were separated into Early, Middle, Late, and Contact Period components according to radiocarbon dates, diagnostic artifacts, and obsidian hydration readings with reference to regional chronological sequences. When deposits were clearly mixed (i.e., diagnostic artifacts, obsidian hydration readings, and/or AMS dates were out of sequence), they were designated Late/Middle, Middle/Early, or Late/Middle/Early.

Excavations at CA-DNO-26 and -334 revealed the majority of intact deposits. Artifact assemblages from these sites are separated by component and presented in Table 12 through Table 14. For full details of assemblage findings from these sites, see Tushingham

(2009). Comparative data from sites CA-DNO-332, -334, and -XX13 is available in Tushingham et al. (2008).

Table 12. CA-DNO-26 and CA-DNO-333 Artifact Assemblage by Component.

Artifact Category & Type	Component						
	Early	Middle	Late/ Middle	Late	Contact	Mixed* Context	Total
Lithic Artifacts							
Projectile Points	-	31	9	80	31	-	151
Bifaces	7	28	48	131	56	9	279
Formed Flake Tools	3	33	26	85	19	3	169
Flake Tools	24	67	99	231	71	33	525
Cobble Tools	5	21	12	27	6	15	86
Cores	2	4	11	30	5	2	54
Core tools	1	3	1	17	4	-	26
Debitage	1,138	7,869	7,961	16,980	2,612	1,723	38,283
Ground and Battered Stone							
Net weights	-	-	-	177	28	3	208
Millingstones	1	1	-	-	2	3	7
Handstones	-	3	2	10	9	5	29
Mortars	-	2	-	2	1	1	6
Pestles (large and small)	-	3	2	16	8	1	30
Hammerstones	-	1	2	8	5	1	17
Pipes and pipe fragments	-	2	-	8	8	-	18
Miscellaneous ground stone	-	5	7	22	3	33	70
Worked Bone, Ivory and Shell	-	1	-	5	1	-	7
Historic Artifacts							
Glass bottle fragments	-	-	-	-	-	203	203
Glass debitage	-	-	-	-	-	171	171
Glass tools	-	-	-	-	-	23	23
Buttons/Personal adornment	-	-	-	-	-	13	13
Ammunition	-	-	-	-	-	7	7
Nails	-	-	-	-	-	76	76
Miscellaneous Historic Artifacts	-	-	-	-	-	4	4

Notes: * Includes artifacts from surface and mixed context (Tushingham 2009:162).

Early Period Component (9000-5000 cal BP)

The Early Period (9000-5000 cal BP), equivalent to the Borax Lake Pattern in northwestern California and Glade Pattern in southwestern Oregon, reflects use of sites by mobile hunters and gatherers as temporary camps. Early Period deposits were identified at CA-DNO-26, -332, -333, and -XX13.

Early Period deposits at CA-DNO-26 and -333 include large foliate bifaces, blade and platform cores, formed flake tools, retouched and used flakes, choppers and a shredder (a cobble tool with serrated edges), a milling stone, and lithic waste flakes (Figure 16). The tool kit was generalized, and lithic technology focused on obsidian biface-reduction strategies. No living surfaces or features were encountered to suggest long-term residency during this time.

Table 13. CA-DNO-26 and CA-DNO-333 Lithic Assemblage by Component.

Tool Class & Type	Component						
	Early	Middle	Late/ Middle	Late	Contact	Mixed* Context	Total
Projectile Points	-	31	9	80	31	-	151
Bifaces	7	28	48	131	56	9	279
Formed Flake Tools							
Cutting tools							
Flake serrate	-	3	3	7	2	-	15
Single edge bifacial flake knife	-	1	-	4	-	-	5
Scraping tools							
Beveled scraper	-	-	2	4	-	1	7
Discoidal scraper	-	2	1	1	-	-	4
Endscraper	-	5	2	11	2	1	21
Keeled scraper	-	1	1	6	1	-	9
Multi-scraper	-	-	-	3	-	-	3
Ovate scraper	-	3	1	3	-	-	7
Spokeshave	-	1	3	8	1	-	13
Scraper fragment	-	2	2	3	1	1	9
Perforating tools							
Drills	-	2	2	6	5	-	15
Gravers	1	5	4	12	3	-	25
Pointed flake	1	3	1	2	1	-	8
Multi-element tools	1	4	4	15	1	-	25
Unknown		1	-	-	2	-	3
Flake Tools							
Retouched	7	16	24	61	19	7	134
Used	17	51	75	170	52	26	391
Cobble Tools							
Chopper, bifacial bit	3	5	3	7	1	3	22
Chopper, unifacial bit	1	11	4	10	2	9	37
Shredder (serrated chopping bit)	1	4	4	8	2	2	21
Sinuous working edge	-	1	1	-	-	-	2
Amorphous cobble tool	-	-	-	2	1	1	4
Cores							
Amorphous	-	3	7	12	3	1	26
Bidirectional	-	-	1	1	-	1	3
Blade	1	-	1	3	2	-	7
Platform	1	1	2	7	-	-	11
Split cobble	-	-	-	1	-	-	1
Core shatter	-	-	-	6	-	-	6
Core Tools by Core Type							
Amorphous	1	2	-	5	3	-	11
Platform	-	-	1	6	1	1	9
Split cobble	-	1	-	4	-	-	5
Core shatter	-	-	-	2	-	-	2
Debitage	1,138	7,869	7,961	16,980	2,612	1,723	38,283

Notes: * Includes artifacts from surface and mixed context (Tushingham 2009:162).

Table 14. CA-DNO-26 and CA-DNO-333 Ground Stone Assemblage by Component.

Tool Type (defined in Tushingham 2009)	Component						
	Early	Middle	Late/ Middle	Late	Contact	Mixed* Context	Total
Net weights	-	-	-	177	28	3	208
Millingstones	1	1	-	-	2	3	7
Handstones	-	3	2	10	9	5	29
Mortars	-	2	-	2	1	1	6
Pestles: large	-	2	2	13	5	1	23
Pestles: small	-	1	-	3	3	-	7
Hammerstones	-	1	2	8	5	1	17
Anvils	-	-	1	1	-	1	3
Pipes	-	2	-	8	8	-	18
Shaped/polished stones	-	2	4	11	4	-	21
Slate fragments and artifacts	-	2	2	2	7	-	13
Paintstones	-	-	-	4	1	-	5
Whetstone	-	-	-	-	1	-	1
Shaft straightener	-	-	-	-	-	1	1
Steatite pendant or labret	-	-	-	1	-	-	1
Quartz crystals	-	-	-	1	1	-	2
Unidentifiable fragments	-	1	-	2	20	-	23
Total	1	17	13	243	95	3	385

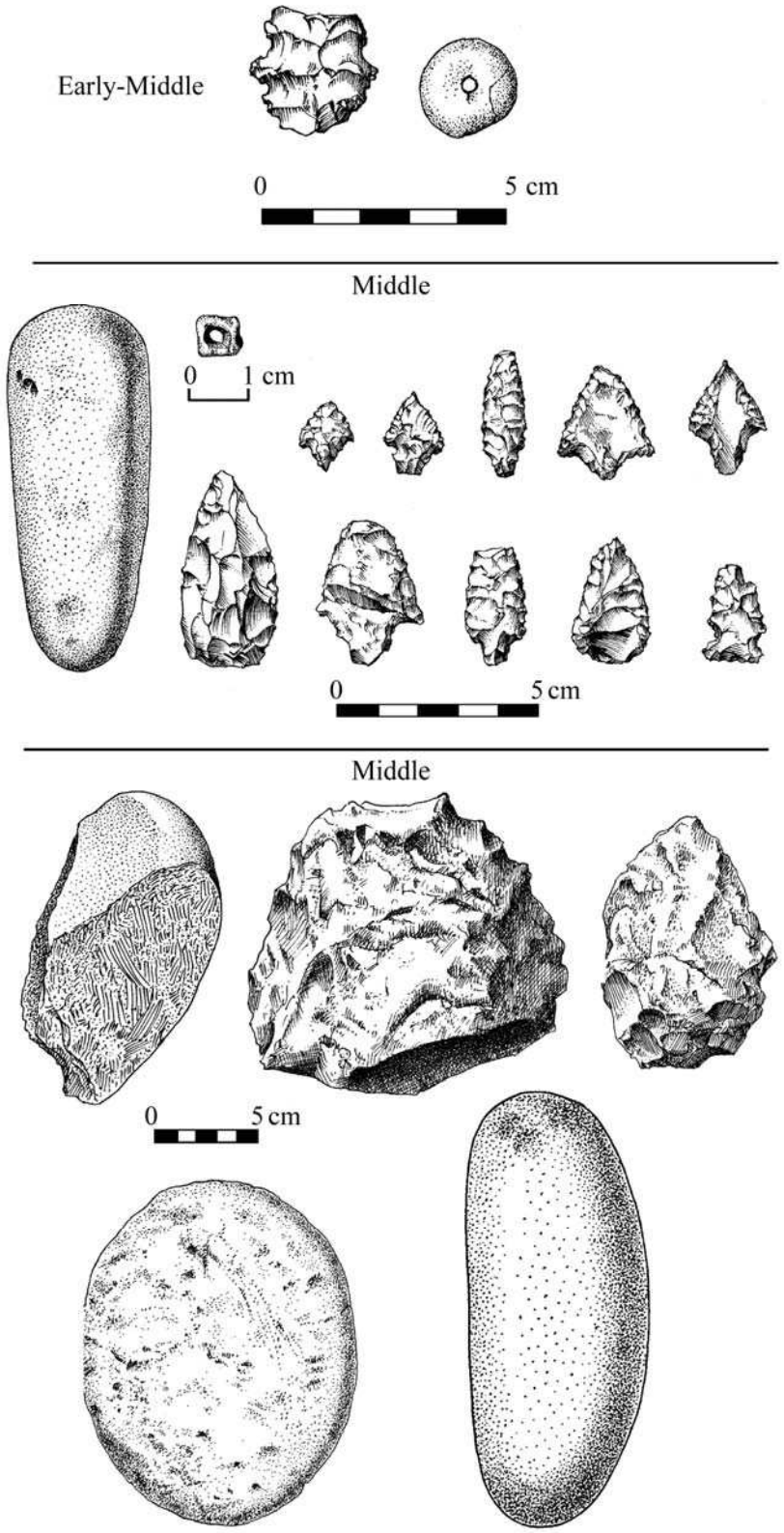
Notes: * Includes artifacts from surface and mixed context (Tushingham 2009:162).

Unit B at CA-DNO-26 provided an intact and well-dated sample. Three AMS dates were obtained from the lower levels of the unit: 7510 cal BP (NOS-57448), 7806 cal BP (PRI-07-146-571), and 8072 cal BP (PRI-07-146-576; see Table 11). Early Period AMS dates obtained from Unit 1 at CA-DNO-332 were stratigraphically mixed: 5838 cal BP (PRI-08-25-82) at 150-160 centimeters below surface, and 8875 cal BP (NOS-64275) at 80-90 centimeters below surface. High mobility is indicated by a generalized tool assemblage, with few formal flake tools and an emphasis on biface (not core) technology. Site CA-DNO-XX13 is a small, single-component site, set on what appears to be an older terrace of the Smith River. While no temporally diagnostic artifacts or radiocarbon datable data was recovered at the site, obsidian hydration evidence suggests the site was in use between approximately 8221 to 5187 BP.

Early sites in southwestern Oregon typically include Glade series foliates and cobble tools, while Borax Lake sites in northwestern California include Borax Lake Widestem points and milling slabs. While foliates were recovered at CA-DNO-26 and -333, Borax Lake Widestems were not. However, the chronological separation of Glade series points remains problematic, as foliates were used until the Historic period throughout the region. Thus, although Early Period deposits cannot be distinguished as either Glade or Borax Lake, Early Period site constituents are similar throughout the region in that they appear to represent seasonal camps or temporary occupations of mobile hunter gatherers.

High Mobility and Exotic Obsidian Use

At the Smith River sites, people used three categories of raw material: (1) abundant, high-quality local chert; (2) lower quality chert and other local stone; and (3) high-quality



Drawn by Rusty van Rossman.

Figure 16. Early and Middle Period Representative Artifacts from Project Sites CA-DNO-26, -332, and -333.

but exotic (distant) obsidian. Obsidian was a sought-after commodity, which has transport costs not associated with other locally available toolstone. Given that the closest obsidian source is located more than 150 miles from the project area (Figure 17) and obsidian is rare in other excavated sites in the region (typically 0.05-5.0% of assemblages), the amount of recovered obsidian at the Smith River sites is remarkable. Although the high proportion of obsidian debitage (47.4% by count) for all components combined is probably elevated in comparison to other sites in the region due to screen size (1/8-inch screens were employed in this project), obsidian still accounts for 29.2% of the projectile points, bifaces, and flake tools.

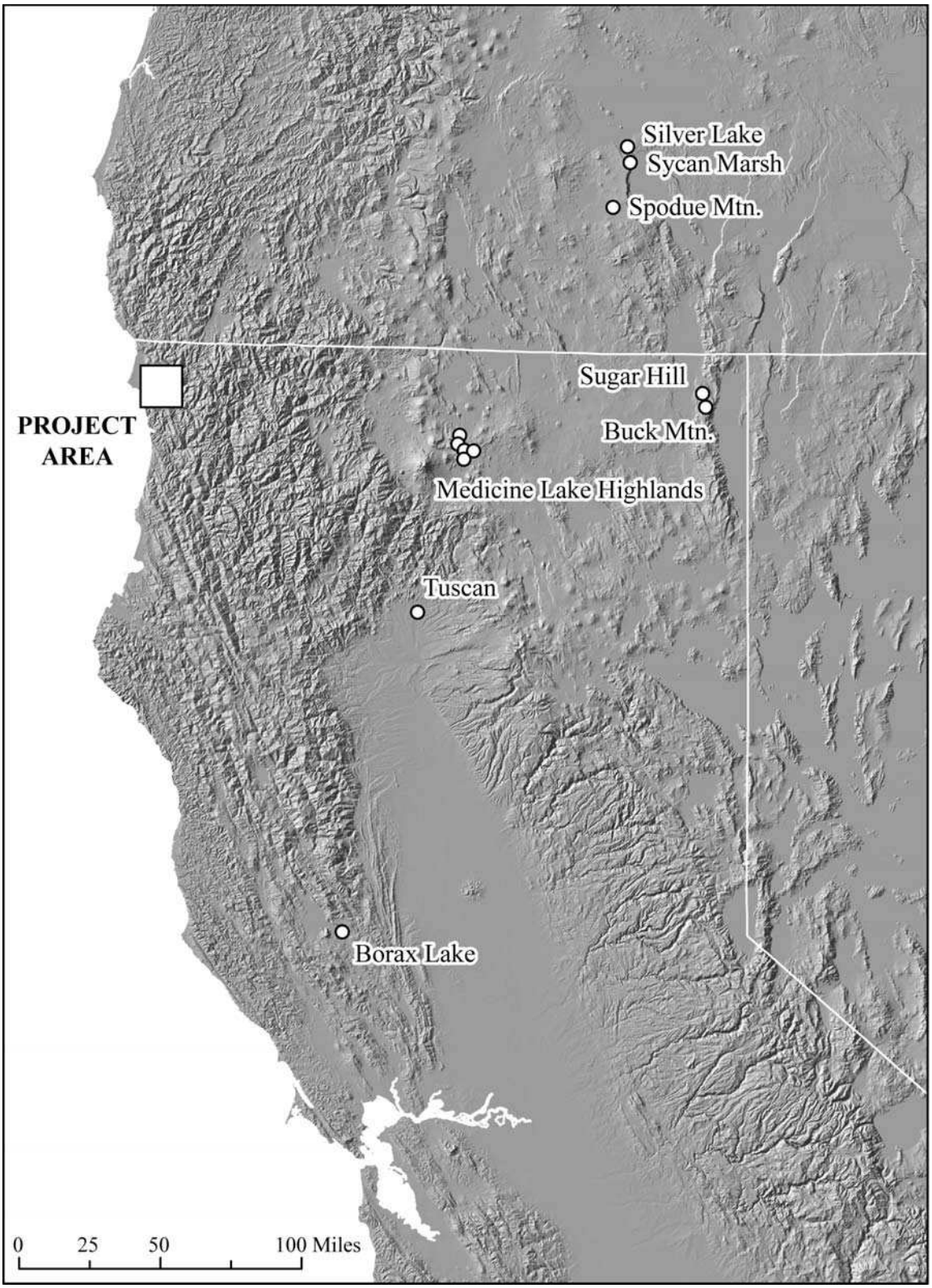
It is expected that mobile hunter-gatherers are likely to use obsidian differently than sedentary people. For mobile foragers, the cost-to-benefit ratio involved with obtaining obsidian may have been lower because obsidian could be obtained while travelling. However, as groups become more sedentary and tethered to local resources, and less willing or able to pay high transport costs or to navigate group interactions necessary to obtain a high-quality but scarce material such as obsidian, focus shifts to high-quality, locally abundant chert. Following Andrefsky's (1994) logic, it is expected that there will be a greater emphasis on bifacial core reduction with obsidian than with chert. As groups become less mobile, the effect will be intensified with obsidian (conservation, more biface reduction, smaller tools, and intensified use), while with chert there should be a general shift to core reduction.

Overall, the Early Period lithic assemblage is overwhelmingly based on obsidian biface reduction. Exotic obsidian use is high and was used more frequently compared to locally available chert earlier in time. For example, Early deposits at CA-DNO-26 contain 83.7% obsidian debitage compared to chert and other local toolstone. Later components contain far less quantities and fewer sources of obsidian (Figure 18). Most obsidian during this time seems to be late-stage bifaces, which is consistent with more mobile foraging systems. Obsidian sources are also extremely diverse, especially compared to later periods (Tushingham 2009; diachrnonic obsidian source diversity trends are also summarized here in Chapter 7).

The obsidian source diversity trend is supported by data from site CA-DNO-332. While excavated components were mixed at this site, radiometric and obsidian hydration data indicate that Exposure 1 contained Early and Middle Period deposits, while Exposure 2 contained mostly Early and Middle Period deposits with lesser amounts of Late Period material. A high percentage of obsidian overall would therefore be expected, particularly in Exposure 1. This expectation is borne out: 71% of the 3,102 pieces of debitage recovered in Exposure 1 was obsidian rather than chert and other local stone. In Exposure 2, 42% of debitage (n=1,401) was obsidian.

Middle Period (5000-1500 cal BP)

Residential stability increased during the Middle Period, equivalent to the Mendocino Pattern in northern California (5000-1500 cal BP), particularly after 3100 BP. Middle Period features and midden deposits were excavated at sites CA-DNO-26, -333, and -332. Six AMS dates were obtained from Middle Period deposits ranging from 3953 cal BP to 2222 cal BP (see Table 11). Deposits dating to between 3100 and 1500 BP, include the earliest ground stone, acorn, manzanita, and features, including a packed floor (Feature D1) and associated hearth (Feature D2) dating to 3098 cal BP (CAMS-114832; see Table 11) at CA-DNO-26, and a lithic work area at CA-DNO-333.



National Elevation Dataset from Gesch (2007) and Gesch et al. (2002).
State boundaries from National Atlas of the United States (2005).

Figure 17. Obsidian Sources Represented at Project Sites.

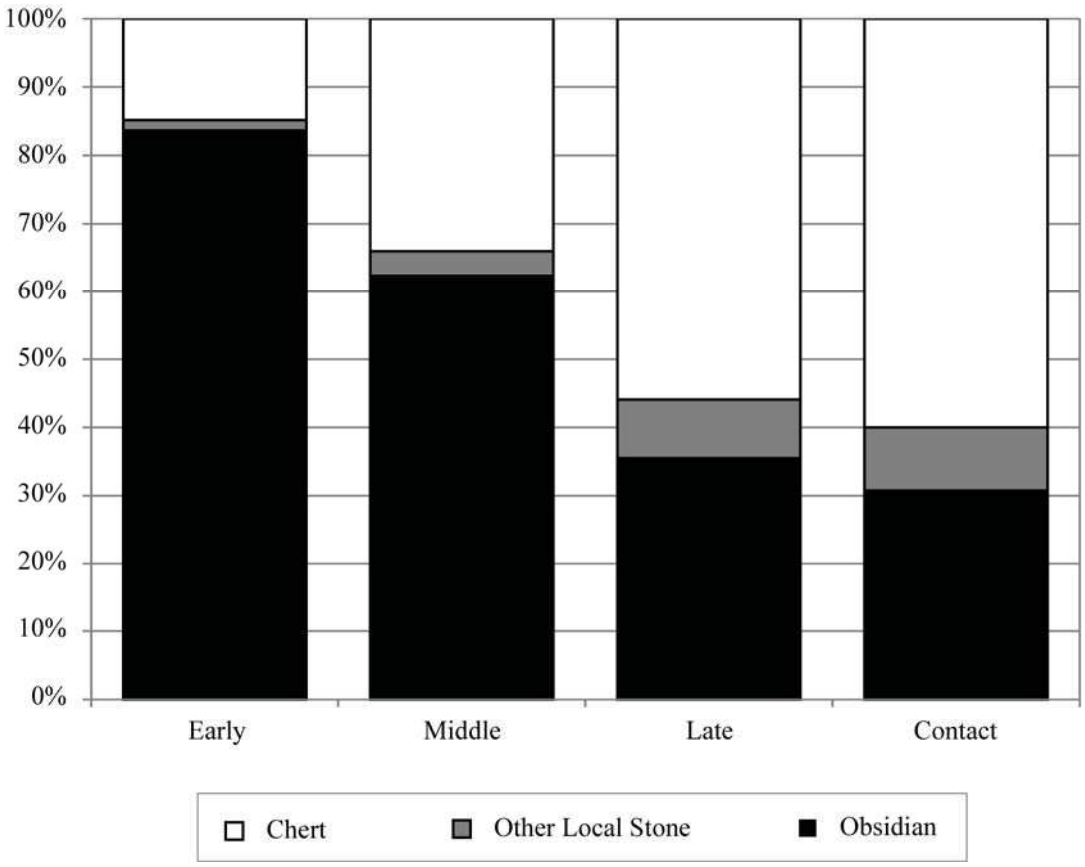


Figure 18. Relative Frequency of Debitage Raw Material by Component.

The assemblage consists of contracting-stemmed and Mendocino Corner Notched points, an "Oregon Series" point, a wide variety of formed flake tools, choppers, bifaces, battered stones, a milling slab, handstones, mortars, pestles, pipe fragments (mostly clay), shaped and polished stone, and slate artifacts including two drilled slate beads (see Figure 16).

Reduced mobility is indicated by the relatively elaborate assemblage. Lithics include a diverse array of formal flaked tools. Choppers (probably for woodworking) are found in larger quantities, and ground stone includes well-formed mortars and large pestles typically associated with intensive acorn processing. Debitage analysis indicates that both biface reduction and core reduction took place. Obsidian use is high, accounting for 62.4% of the debitage.

Increased Residential Stability, Acorn Intensification by 3100 BP

During the Middle Period, obsidian use remains significant and diversity is high (indicative of higher mobility), but the following suggests a decreased degree of mobility:

1. The assemblage is characterized as relatively specialized and diverse and is more similar to the Late Period assemblage than to the Early Period. Lithics include a diverse array of formal flaked tools, as many categories as were used in later times. Choppers, typically associated with woodworking, are found in larger quantities, and ground stone includes well-formed mortars and large pestles typically associated with intensive acorn processing.

2. Analysis of the flaked stone tools suggests core reduction as the dominant lithic reduction strategy. Debitage analysis indicates that both biface reduction and core reduction took place.
3. Features indicate an increasing degree of residency during the Middle Period. At CA-DNO-26, Middle Period features include a packed floor and associated hearth dating to 3098 cal BP (CAMS-114832), and a ground stone concentration underneath this feature. At CA-DNO-333, a lithic work area dates to the Middle Period, and at CA-DNO-332, a probable living surface was encountered in Unit 1 in association with an Oregon series point which date to between 5500 and 2500 cal BP.

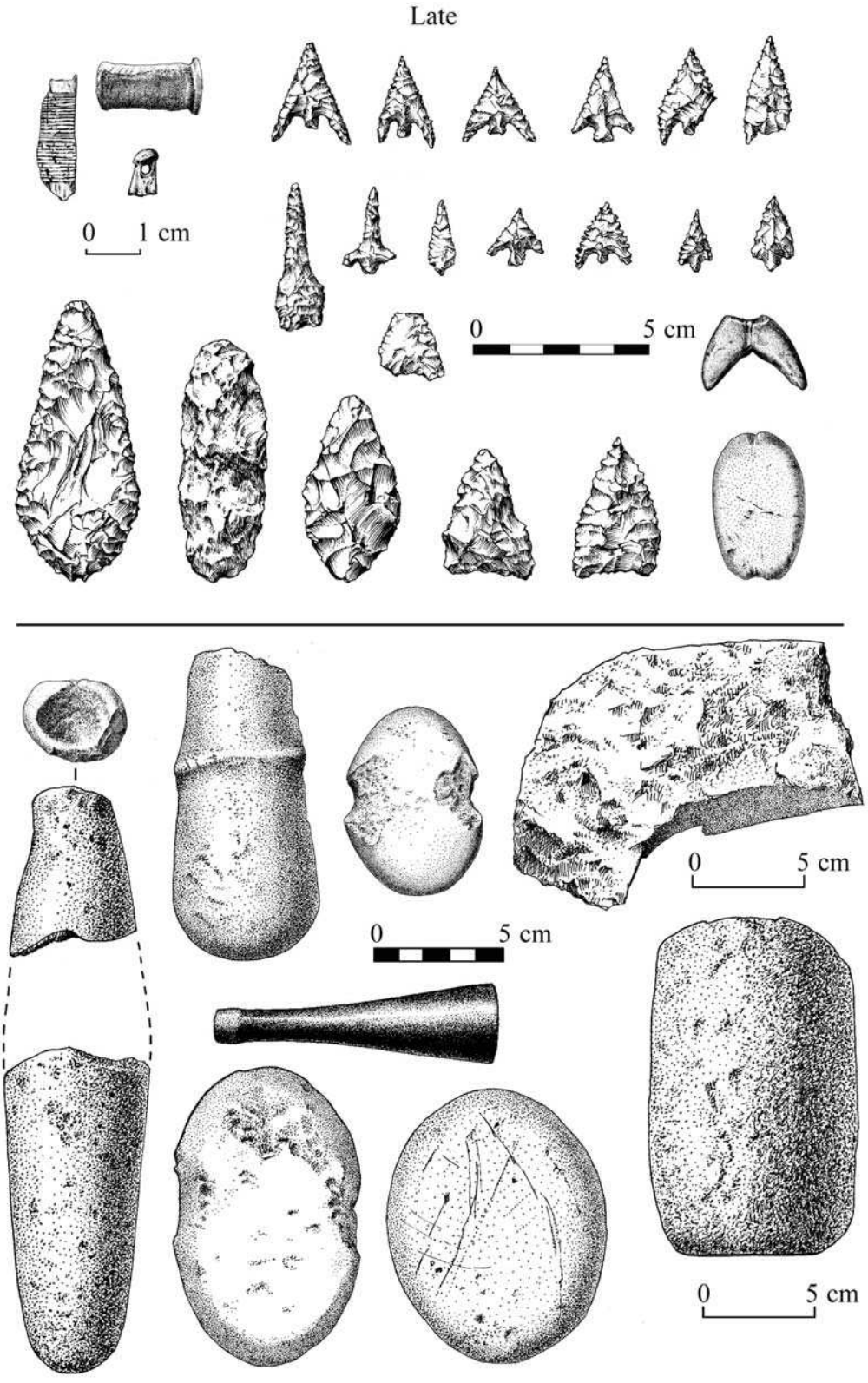
The combined evidence suggests that during the Middle Period (5000-1500 cal BP), mobility decreased slightly and the sites served as residential bases. Site residency seems to have increased after 3100 cal BP as plant processing became more important. This is indicated by a number of features dating to the latter part of the Middle Period, the presence of well-formed mortars and large pestles, and the presence of nuts and seeds in flotation samples from Middle Period deposits. Acorns seem to have been a key staple by this time, while evidence for the intensive mass harvesting and storage of salmon was not found at any of the project sites. Reduced mobility is also inferred by the relatively specialized and diverse toolkit, which includes a diverse array of lithic tools, including formal flake tools and choppers, and a reduction in biface technology.

Late Period Component: (1500 cal BP-AD 1850)

Late Period/Gunther Pattern (1500-150 cal BP) deposits were excavated at sites CA-DNO-26, -333, -332, and -334. Late Period features include two slab-lined hearths at CA-DNO-333 and four semi-subterranean Redwood plank houses (Houses 1-3 at CA-DNO-26 and House 5 at CA-DNO-333) with associated features (hearths, postholes, burned plank wall and roof fall, a rock alignment, and food caches).

Seventeen AMS dates were obtained that are associated with the period ranging from 1232 to 123 cal BP. Ground stone—including highly crafted flanged pestles, hopper mortars, and mortar bowls—is much more abundant than in the Middle Period. The lithic assemblage includes a wide variety of tools, including formed flake tools, choppers, bifaces, and battered stone (Figure 19). Bow and arrow technology spread to northwestern California by this time. Late Period diagnostic projectiles include Gunther barbed and Gunther variant points and other small triangular projectile points. This period shows the first evidence of specialized fishing and woodworking tools and sociotechnomic artifacts such as steatite pipes and pendants, quartz crystals, and carved stone and bone. Not found in earlier contexts, specialized fishing equipment such as net weights and concave-based harpoon tips are abundant in Late Period deposits. While bone preservation is poor, there is a significant increase in salmon bone in Late Period houses suggesting salmon intensification or storage. The earliest pinniped (seal or sea lion) bone, barnacle (*Balanus* sp.), mussel (*Mytilus californianus*), and clam (*Saxidomus* sp.) are represented in the Late Period assemblages.

Late Period riverine and coastal sites share similar site constituents (e.g., Gunther series points, concave-based [harpoon] points, sociotecnomic artifacts), and residential patterns (semi-subterranean houses in linear villages, sedentism or semi-sedentism, logistical mobility [*sensu* Binford 1980, see also page 75], and intensive processing techniques).



Drawn by Rusty van Rossman.

Figure 19. Late Period Representative Artifacts from Project Sites CA-DNO-26 and -333.

Development of Plank House Villages, Salmon Intensification/Storage by 1250 BP

The archaeological excavations summarized in this monograph established firm evidence of the rise of linear plank house villages at CA-DNO-26 by 1250 BP. Exposures at two of the plank houses (House 1 and House 3) were sufficient to determine their size. House floors were clearly defined by the presence of packed clay; house walls and interior pits were demarcated by burned vertical (upright) planks and distinct soil color differences between the outside and inside of the houses. The earliest excavated plank house in northwestern California, House 1 at CA-DNO-26 (Figure 20), has a mean pooled radiocarbon age of 1267 BP (square root of variance = 21.05). The date was derived from three AMS dates on burnt seeds from the house floor (see Table 11). Using Calib 5.0.1, the samples are statistically the same at 95% level. House 1 measures approximately nine meters on its north-south axis and has a six-meter-wide, 30-centimeter-deep interior pit. House 3 at CA-DNO-26 measures approximately six meters on its north-south axis with a 2.3-meter-wide, 60-centimeter-deep interior pit (Figure 21). A single AMS date was obtained from a seed recovered from the floor of the house. The sample (CAMS-114828) dates to 1087 cal BP.

Limited testing at House 2 at CA-DNO-26 and House 5 at CA-DNO-333 was sufficient to establish that the depressions represented semi-subterranean plank houses, but an accurate measurement of their dimensions was not possible because the houses were not fully exposed. A charcoal sample from a post associated with House 5 dates to 491 cal BP (NOS-57449), but dating of House 2 remains problematic.[1]

There is overwhelming evidence that by 1250 BP, low residential mobility, storage, a focus on mass-extractive methods, and logistical pursuit of resources was the dominant strategy. The tested Late and Contact Period semi-subterranean plank houses demonstrate that CA-DNO-26 and -332 had become sedentary villages by circa 1250 cal BP. Plank houses were large, permanent storage facilities where a broad range of foods were kept, including foods obtained from other environmental zones. Though bone preservation overall is poor, there is a significant increase in salmon bone, suggesting salmon intensification or storage. The Late Period provides the first evidence of the logistical procurement of distant seasonal foods, which were pursued by task-oriented groups tethered to residential villages. The earliest pinniped, marine shellfish, and marine mammal hunting gear was discovered in Late Prehistoric houses and middens, suggesting that rather than residential movement to resources (a forager strategy), residents obtained these foods and returned with them to their home base in logistical, task-oriented groups (a collector strategy). [2] The presence of net

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[1] An AMS date from the floor of House 2 dates to 2317 cal BP (CAMS-114833), but the presence of Late Period diagnostic artifacts, obsidian artifacts with low hydration readings, and an AMS date of 485 cal BP (PRI-07-146-6014) 20 centimeters above the house floor suggests that this date is too early. Sample CAMS-114833 was obtained on charcoal not identified to species, so it is possible that the date is subject to the "old redwood problem," meaning that if it came from redwood, it could produce a date much older than the house floor.

[2] As described by Binford (1980), the archaeological signatures of foragers and collectors differ. Foragers tend to be residentially mobile (a strategy involving moving from place to place often and "mapping on" to resources) and their technology generalized and expedient. In contrast, collectors tend to be logistically mobile (a strategy where people are more tethered to residential bases, and resource acquisition involves scheduling and storage of specific foods obtained by specialized task groups) and their technology specialized and curated. Collectors, with their focus on logistical pursuit of resources, prepare for an array of activities that will take place at different locations throughout the year, so more emphasis is placed on investment in offsite gear and specialized equipment. Tool

weights indicates specialized fishing gear and that people were settled enough (and willing to pay the costs involved) to make, store, and use nets. A restructuring of long-distance exchange relationships during the Late Period is indicated by a dramatic decrease in obsidian debitage and tools and decrease in source diversity (see Chapter 7). The increase in core technology, and focus on fewer and more local sources is consistent with the developing insularity of social groups and increased sedentism that is characteristic of the Late Prehistoric.

Contact Period (AD 1850-1902)

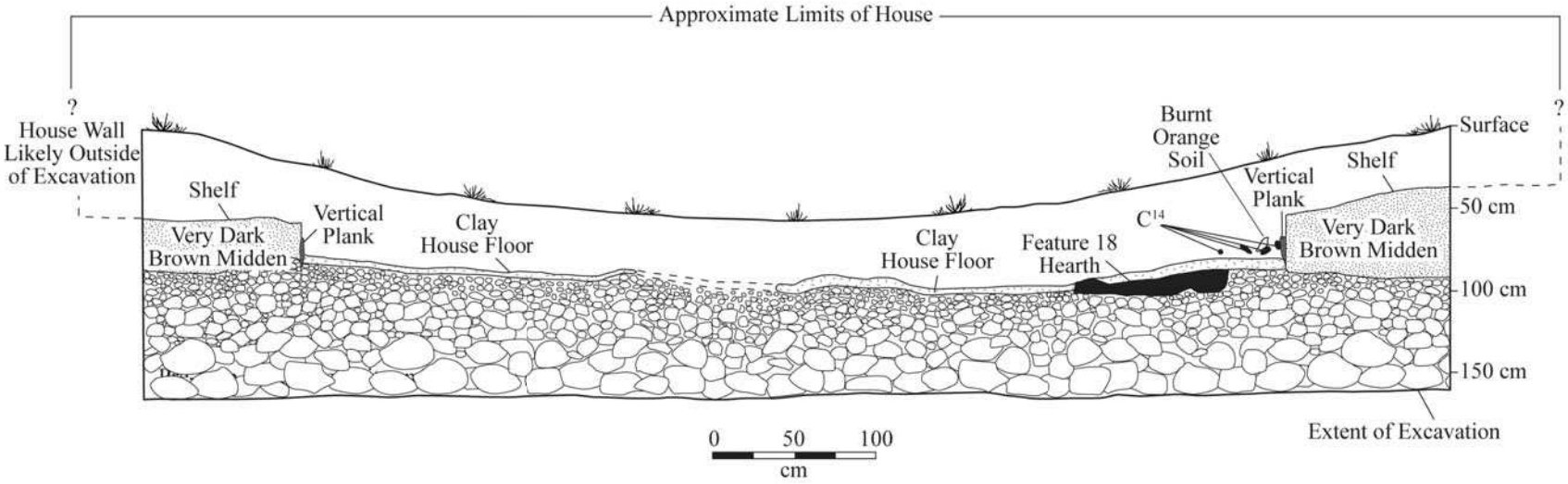
Contact Period site deposits are limited to a relatively small area in and around a house excavated in the easternmost limits of DNO-26. This is consistent with ethnographic description of the site being a "suburb" or offshoot of *Tatatun*, a major village site in present-day Crescent City (Drucker 1937). According to Drucker's Tolowa consultants, the village had two houses and a sweathouse, likely representing an extended family house cluster or "sweathouse group." The terminal occupation of Red Elderberry can be placed at 1902, when local white residents shot and killed its last resident, "a renegade," while fleeing into the forest (Ritter 1969a). According to an interview with a local resident (Ritter 1969b) the murdered man may have been "Chief Phillips," who was buried on a prominent knoll several miles downriver at a site known as "Chief Phillips Burial Rock" (CA-DNO-25).

The Contact Period house is a heavily burned, semi-subterranean structure that had remarkably well-preserved redwood plank floors, upright plank walls, an internal paved area, and a centrally located slab-lined hearth, and dates to AD 1850-1890 (Figure 22 through Figure 24). The house had clearly burned in a very hot fire, which contributed to its excellent preservation. Excavation involved removal of collapsed roof and wall boards and burned orange-colored soil laden with artifacts above the house floor (Figure 25). The house is virtually identical to ethnographically described sweathouses in northwestern California. Commonalities include the size of the house, the shape and depth of the hearth, and the fact that the house was entirely subterranean and lacked a central pit or storage shelf (Table 15).

A rendering of the Tolowa sweathouse is shown in Figure 26. The floor plan, hearth, orientation of wall planks, and exit location are based on sweathouse excavations, while the roof and house entrance location are based on ethnographic descriptions and information from Tolowa consultants. While not completely excavated, the house exit is depicted at the east side of the house based on the presence of large regularly spaced boulders which had only been placed on this side of the house. The house entrance is drawn at the river-facing south wall of the house, as entrances unerringly faced bodies of water and were positioned at a wall adjacent to the exit. The house may have been covered in earth as some other historically documented Tolowa sweathouses were (Figure 27).

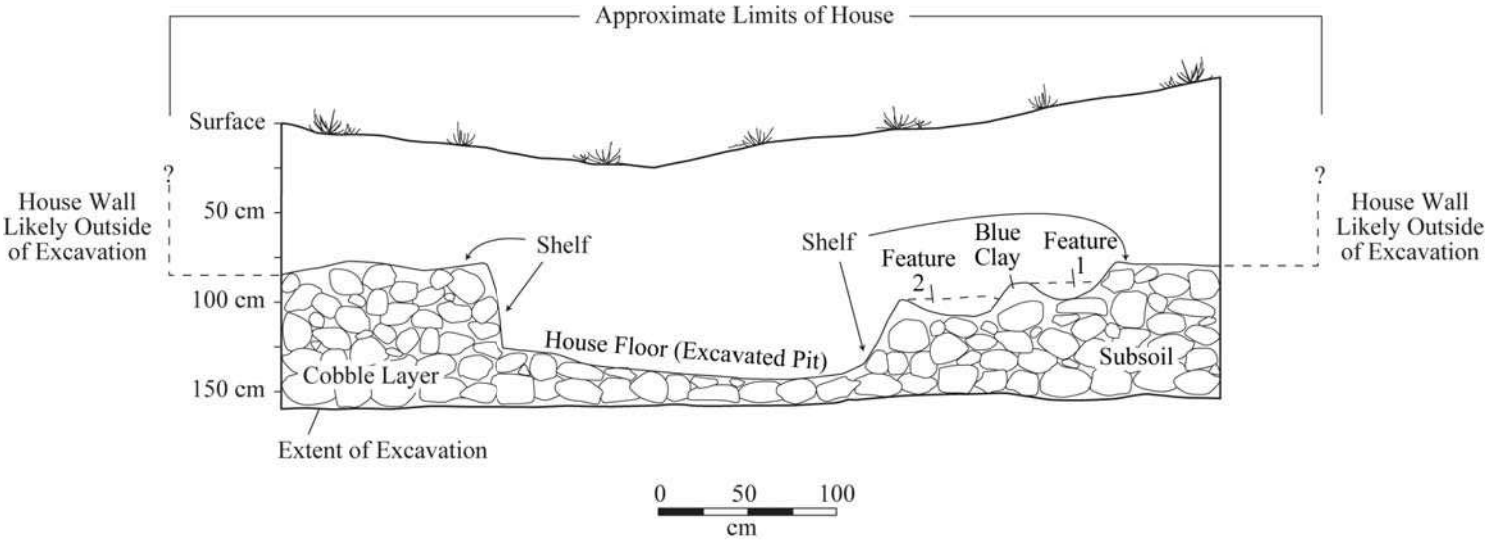
The sweathouse artifact assemblage includes net weights, mortar bowls and pestles, Gunther Barbed points, Gunther snake points, Rattlesnake series points, small concave-based points, a Desert Side Notched point, steatite pipes and pipe stem fragments, a stone

assemblages tend to be diverse. Therefore, collector "assemblages accumulate over longer periods and, owing to the greater depletion of local resources, represent activities occurring over a larger area, often great distances from the residential base" (Bettinger 1991:67).



Drawn by Wendy Masarweh (Tushingham 2009).

Figure 20. House 1 Profile, CA-DNO-26.



Drawn by Wendy Masarweh (Tushingham 2009).

Figure 21. House 3 Profile, CA-DNO-26.

View west.

Figure 22. House 4 Sweathouse Plan View.

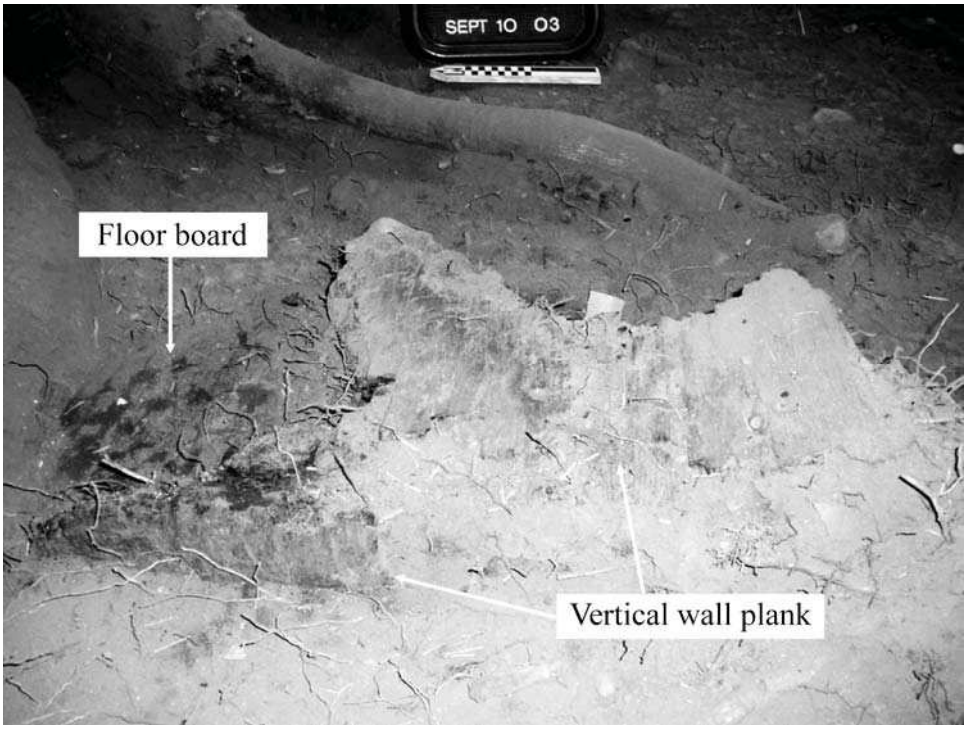
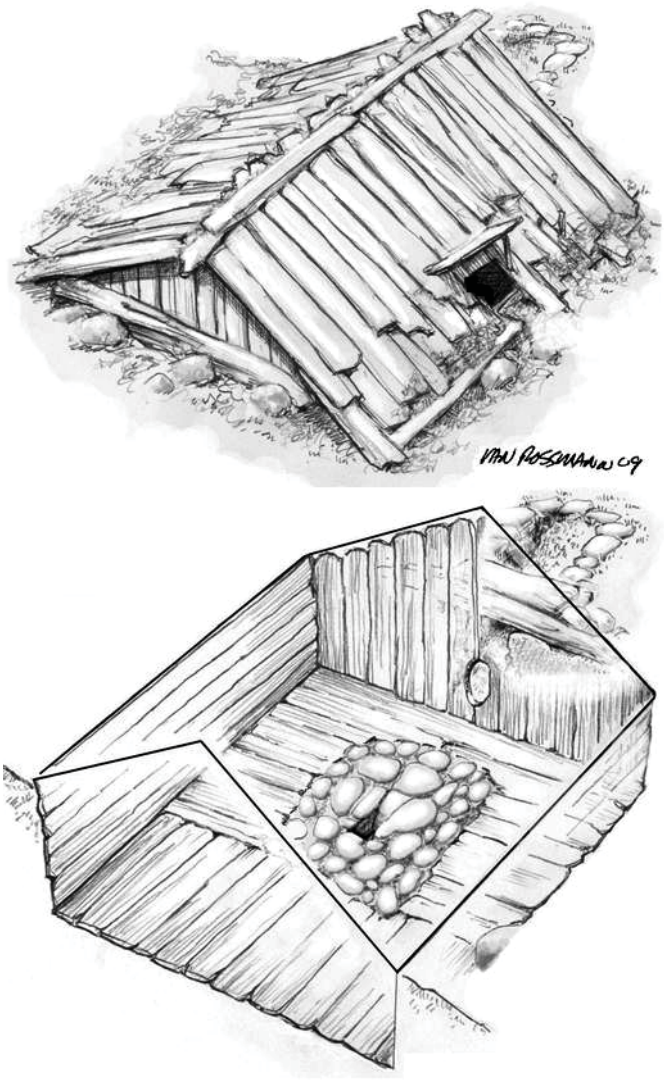


Figure 23. House 4 Sweathouse Vertical Wall and Floor.

View northwest.

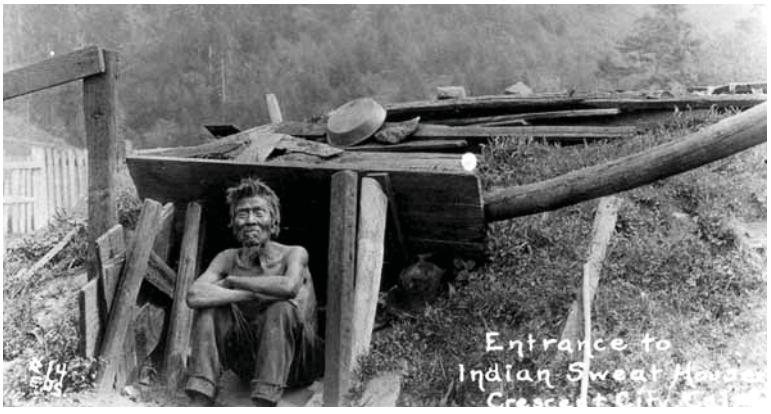
Figure 24. House 4 Sweathouse Paved Stone Feature and Hearth.

Figure 25. Sweathouse Excavations, 2004.



View northeast; Floor plan based on House 4 Sweathouse, other features based on ethnographic descriptions and information from Tolowa consultants. Drawn by Rusty Van Rossman (Tushingham 2009, n.d.a).

Figure 26. Interior and Exterior Reconstructed Tolowa Sweathouse.



Photograph by Fred Endert. From Gould (1978:131).

Figure 27. Tolowa Sweathouse at Village of *Šxme,* ca. 1910.

whetstone, brass shotgun shells, flaked historic glass tools and modified flakes, buttons and other items of personal adornment, and square nails (Figure 28). Overall, the associated assemblage is quite like that of the Late Period, with the addition of historically available material, often used in a traditional manner.

Analysis of toolstone indicates that mobility was probably further reduced, as obsidian use declined slightly and there was an increase in core technology. A miniature "socioceremonial" obsidian blade was recovered which is derived from Buck Mountain obsidian, the same distant source used for many of the larger obsidian blades used ethnographically (Hughes 1978). Connection with central California is indicated by southern point types (e.g., Rattlesnake series). Gunthersnake points—barbed triangulars with expanding bases—may reflect a technological influence from the southern Rattlesnake cluster.

Table 15. Comparison of Ethnographic Family Houses and Sweathouse Characteristics with Archaeological House at CA-DNO-26.

	FAMILY HOUSES	SWEATHOUSES	CA-DNO-26 HOUSE
House size	15-21-foot frontages	12-foot frontages	11.8 x 11.8 feet
Storage shelf	Present	Absent	Absent
Interior excavated pit	Present	Absent	Absent
Interior stone pavement	Absent	Frequent	Present
Subterranean stone lined exit	Absent	Present	Present
Hearth shape	Round	Square or rectangular	Rectangular
Hearth depth	Shallow	1.5 feet deep	1.4 feet deep
Hearth construction	Stones laid out in circle	Slab-lined	Slab-lined

Notes: Ethnographic data from Driver (1939), Gould (1966a, 1978), and Kroeber (1925), also cited in Tushingham (n.d.a).

Continuity and Change

Comparison of the Contact Period artifact assemblage to that of the Late Period contexts has provided information critical to understanding the effects of Euro-American settlement on native populations (Tushingham 2005, 2009, n.d.a, n.d.b). Overall, it appears that Red Elderberry Place inhabitants employed similar subsistence activities, notably mass extraction and storage of salmon and intensive acorn processing techniques, while incorporating new (historic-period) materials and technology into their cultural system. The presence of marine shell, net weights, and concave-based harpoon tips suggests that mass extraction of resources and logistical mobility remained important strategies. The Contact Period diet was probably very similar to that of the Late Period, though the presence of a cottontail rabbit bone and increase in small to medium mammal bones and small seeds compared to earlier periods suggests some degree of dietary intensification. Identified subsistence remains not represented in earlier contexts include bitter cherry pits and cow bone. How people survived and adapted during this tumultuous time is an important research theme that is summarized in Chapter 7.

A-B. Gunther Barbed Projectile Points (PPT); C. Gunther Variant PPT; D. Gunthersnake PPT; E-F. Drills; G. Rattlesnake Corner Notched PPT; H. Desert Side Notched PPT; I-J. Harpoon Tips; K. Miniature Obsidian Socioceremonial Biface; L. Triangular Point; M-N. Bifaces; O. Glass microblade core; P. Porcelain button; Q-S. Iron Saunders Type Buttons; T. Small Pestle; U-V. Shotgun Sell Casings; W. Lead Fishing Weight; X. Clothing Clasp; Y. Ring; Z. Drilled Slate Object; AA. Possible whetstone; BB. Hand hewn iron nail; CC. Netweight; DD. Ornamental Cast Iron Stove Fragment; EE. Hammerstone; FF. Large Pestle; GG. Pick Axe Head; HH. Mortar Bowl Fragment; II. Glass Bottle Fragments; JJ. Metal Spike; KK. Chopper/ Shredder. Drawn by Rusty van Rossman (Tushingham n.d.a).

Figure 28. Representative Contact Period Artifacts.

Chapter 6: Ethnographic and Archival Data

This chapter provides a summary of ethnographic and archival data relating to the Tolowa. Included is a summary of early and mid-century ethnographic accounts, which overwhelmingly focused on coastal groups. A major effort of this study is to describe and explain interior river site organization with several lines of evidence: archaeological data, unpublished field notes, analogues with the coastal Tolowa and nearby river groups, and interviews with contemporary Tolowa, several of whom had parents and grandparents who lived in river villages. This information is included in the section on Gee Dee-ni', or Upriver, Tolowa below. Historical data on early Euro-American contacts in the region provides context for the Contact Period site occupation and demonstrates native persistence in the Smith River Valley. Red Elderberry Place inhabitants lived alongside at least two Indian-white families who were firmly entrenched in the area by the 1860s-1870s.

THE OREGON ATHABASCANS

The Oregon Athabascans of southwestern Oregon and northwestern California include the Chetco, Umpqua, Tutuni, Coquille, Galice Creek, Applegate Valley, and Tolowa, who shared a common language and culture[3] (see Figure 6). Villages were located primarily along the coast and rivers between the Umpqua River in Oregon and Wilson Creek in California, and were historically divided into tribal groups, mostly according to geography and dialect differences (DuBois 1936:49; Drucker 1937:222-223; Miller and Seaburg 1990:580):

> These Athabascans have been divided into a number of groups, partly on a geographical basis and partly as the result of post-European historic accidents. The proper division is the purely geographical one. The inhabitants of each drainage system formed something of a linguistic and cultural unit.

[3] Oregon Athabascan languages are similar lexically to "California Athabascan" languages, such as Hupa, Mattole, and Sinkyone, though they are mutually unintelligible.

> Throughout the region, there were sufficient variations of sound and usage from one river valley to the next to make the speaker's provenience readily recognizable. As with the language so with the culture. The kind and number of accretions to the common stock of traits of course differed as the alien neighbors of each group differed. The southernmost group, the Tolowa, acquired from the adjacent Yurok an overlay of customs different from that which the Upper Coquille people acquired from their Kusan neighbors. [Drucker 1937:222]

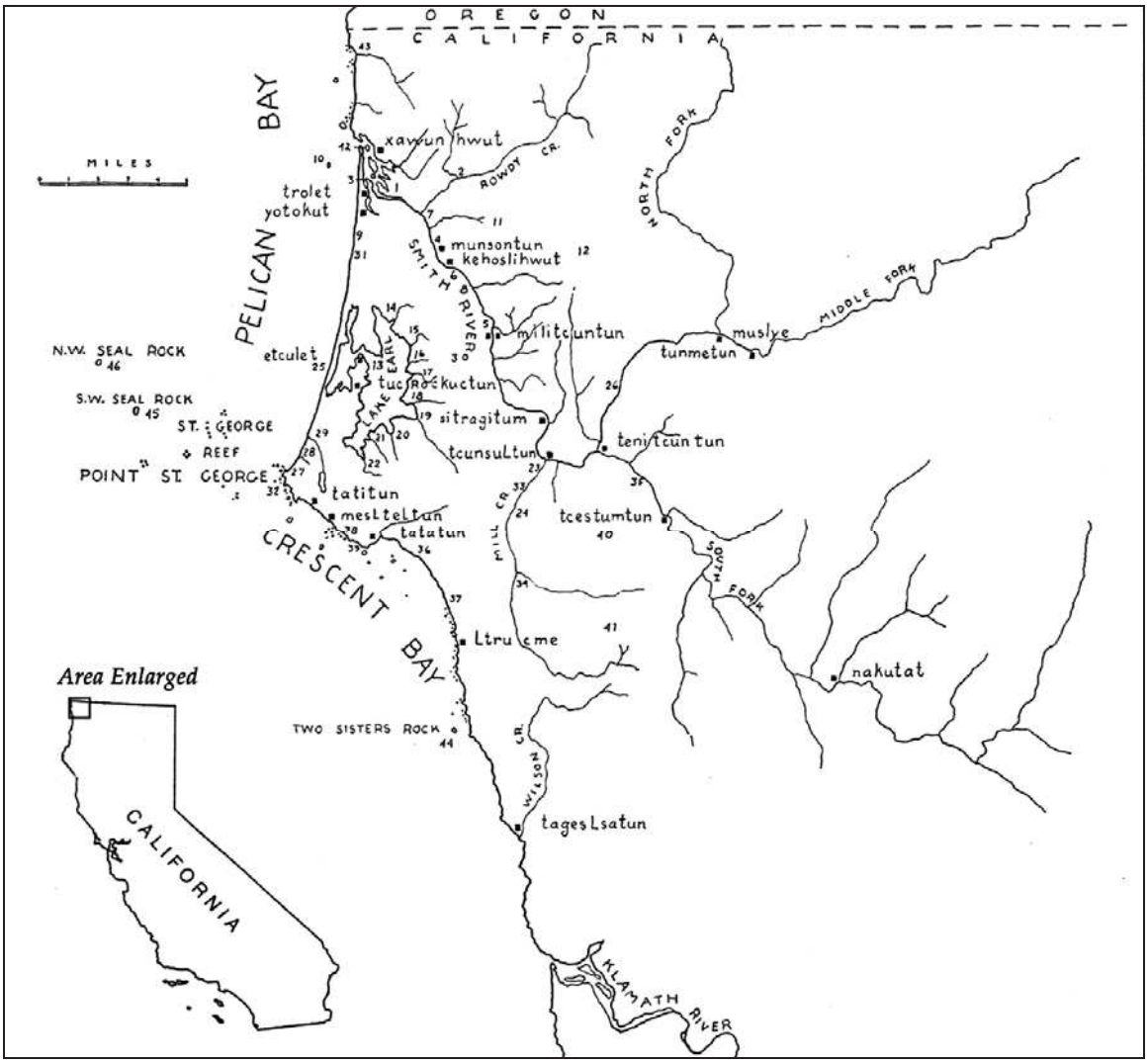
Groups in southern Oregon Athabascan territory later came to be known as the Tolowa,[4] in an area that includes most of Del Norte County, California, and parts of southern Curry County, Oregon. These lands cover roughly 640 square miles along the Pacific coast, from the Winchuck River in southwestern Oregon to Wilson Creek in northwestern California, and include the entire Smith River watershed and adjacent upland areas (Figure 29). While ethnographers and archaeologists have found historic tribal divisions to be useful, most recognize that these "tribes" were all part of the larger Oregon Athabascan society.

ETHNOGRAPHIC TOLOWA

As with the rest of aboriginal northwest California, Tolowa villages were sociopolitically autonomous. As noted previously, there was no "Tolowa Tribe" in the past. Unity and order within the system was derived from a complex system of torts, an unambiguous sense of law and ownership, economic ties between villages, and loyalty to certain village districts or *yvlh-'i~* ("that which is looked over;" Loren Bommelyn, personal communication 2007). The Tolowa also shared a common place of genesis at *Yontocket*, a coastal village near the mouth of the Smith River, and came together for World Renewal (Ne-Dosh) dances and other ceremonials.

Historic Tolowa settlement is unique within northwestern California, as it is generally characterized in the ethnography as "coastal oriented" (e.g., Gould 1978:130) compared to more "river-centric" groups such as the Yurok, who by comparison were densely populated upriver and had relatively few coastal villages. Drucker (1937:226) evaluated Tolowa population as "marginal" and offered an environmental explanation for this state of affairs; the Smith is much shorter and less navigable than the Klamath and, "lacking a good waterway, inland expansion was impeded by the dense tangles of forest and underbrush which still make cross-country travel difficult. There was a slight shifting inland, but the population never came close enough to the margin of subsistence to make large-scale expansion necessary."

[4] "Tolowa" is actually a Yurok and Hupa word (Curtis 1924:91) which may refer to a Tolowa village at Lake Earl named Tolokwe (Kroeber 1925:124-125). The Tolowa refer to themselves as "Huss" (Xvsh), which translates to "human being," or Dee-ni', which means "Tolowa folk" (Bommelyn personal communication; Gould 1978:136).



From Drucker (1937:Map 3).

Figure 29. Major Contact Period Villages in Tolowa (Southern Athabascan) Territory.

According to Drucker (1937:226) interior settlement was limited to hunting and gathering camps in the uplands and "minor" upriver suburbs, including *Munsontun*, *Kehoslihwut*, *Militcuntun*, *Sitragitum*, *Chvn-su'lh-dvn* (CA-DNO-26 or Red Elderberry, the major study site), *Tenitcuntun*, *Tunmetun*, *Muslye*, *Tcestumtun*, and *Nakutat* (Table 16). Ethnographically, most major towns were located on the coast and estuary and include *Yontocket*, *Troolet*, *Howonquet*, *Tatatun*, *Tatitun*, *MesLteLtun*, *Etchulet*, *TucRockuctun*, and *Ltrucme* (Table 17).[5]

[5] The Tolowa language has many written forms. For place names referred to in the text see Table 16 through Table 19, which list Tolowa names given in the orthography supplied by Loren Bommelyn (in the Practical Alphabet), and in the Unifon alphabet which is employed by the Tolowa Language Class (1972), Bommelyn (1989), and Reed (1999). Drucker (1937), Gould (cf. 1966), and Waterman (1925) used different writing systems as well.

Table 16. Ethnographic Upriver Villages and Camps: Source Descriptions and Translations.

Anglicized Name & Trinomial	Practical Alphabet [1]	Unifon [2]	Drucker (1937)	Ethnographic Description [3]
Upriver Villages and Camps				
Red Elderberry Place (CA-DNO-26)	*Chvn-su'lh-dun* "red elderberry place"	ƆUN-ƆƱT'Ø-DUN	*tcuncuLtun* "Pigeonberries there"	Village with "2 houses and a sweathouse. *Tatatun* suburb." Main dissertation research site (Tushingham 2009).
Hiouchi (CA-DNO-332?)	*Xaa-yuu-chit* "important or beautiful water"	O-YU-ƆIT	-	Village on or near Catching homestead. Near modern-day Hiouchi.
Levshame	*Lhe'sr-me'* "plank or board in"	ØLÉR'S-ME'	-	Village north of Hiouchi bridge.
Sitragitum (CA-DNO-28)	*See-tr'ee-ghin-dvm* "stone/boulder descending trail or path"	CEE-T'RE-GHIN-DUM	*sitragitum* "to the beach descends there"	Village with one house and a sweathouse. "Old site re-inhabited by *Echulet* man." 1 house and sweathouse. Peacock Flat area.
Wagon Wheel	*Tee-nee-chvn-dvn* "road at the foot of"	TE-NE-ƆUN-DUN	-	Walter Cook's place at Wagon Wheel.
Nelechundun	*Nii~-lii~-chvn-dvn* "riffle at the foot of"	NÍƝ-LIƝ'ƆUN-DUN	-	Present-day family home of Loren Bommelyn's family.
Milichundun	*Mii~-lii~-chvn-dvn* "flow into at the foot of"	-	*militchuntun*	"Former weir site. 2 houses...1 sweathouse," "located on the eastside of the river at *Nelechundun*."
Gasquet	*Mvs-ye* "beneficial underneath"	MÚC-YE	*muslye*	Village at Gasquet Flat, *Yontocket* suburb.
Big Flat	*'En-chwa* "land large"	E-N'ƆWO	-	-
Lower Big Flat	*Naa-k'vt-'at* "upriver at"	NO-K'ÚT-OT	*na'kutat*	"*tatatun* suburb."

Notes: [1] Loren Bommelyn, personal communication. [2] From Tolowa Language Class (1972) and Bommelyn (1989), cited in Reed (1999). Tolowa Unifon Font, © 2009 Elk Valley Rancheria, California. For the Tolowa Unifon orthography, see Tolowa Language Class (1972). [3] Quoted text from Drucker (1937) unless otherwise noted.

Table 17. Ethnographic Coastal and Estuarine Villages and Camps: Source Descriptions and Translations.

Anglicized Name & Trinomial	Practical Alphabet [1]	Unifon [2]	Drucker (1937)	Ethnographic Description [3]
Coastal and Estuarine Villages and Camps				
Yontocket	*Yan'-daa-k'vt* "south there upon"	YON'DÓ-K'UT	*yotokut*	Tolowa place of genesis, at mouth of Smith River. Site of 1853 massacre. "Formerly largest town. 7 Indian houses, 2 sweathouses and sacred sweathouse after the Holocaust."
Troolet	*Tr'uu-le'* "fishing point"	T'RÚ-LET	*trolet*	"Small suburb of *Yontocket.*"
Howonquet	*Xaa-wan'-k'wvt* "the place along there upon by the river"	XÓ-WON'GWUT	*xawunhwut*	Moved to island near mouth Smith River *"(stu'ndaso-hwut)* 13 "Indian houses," 3 "white man's houses," 3 "sweat houses."
Tatatun	*Taa-'at-dvn* "outward-at-place"	TO-ÓT-DUN	*tatatun*	Village at Crescent City. "11 houses, 2 sweathouses."
Etchulet	*'Ee-chuu-le'* "land large peninsula"	ÉE-ƆƆ-LET'	*etculet*	"Large town, noted for wealth, 11 houses, 4 sweathouses" at Lake Earl.
Tucrockuctun	*Srvsr-natlh-k'vsh* "wood/(canoe) being drug"	-	*tucRocKuctun*	"9 Indian houses, 3 white-man houses, 2 sweathouses." *Etchulet* "offshoot" at Lake Earl.
Point St. George (CA-DNO-11)	*Taa-ghii~-'a~* "outward placed there"	TÓ-GHÍИ-ON'	*ta'giatun* "standing up there"	Shellfish gathering and "camping place for sea lion expeditions," village site formerly. *t'aiɣaʔn* in Gould (1966a).
Sweetwater	*Taa-gha'sr-naa-lhxvn* "water sweet"	TO-GHÓR'S-NO-ƐXUN	*ta'gəcnuLxuntun* "sweetwater place"	Smelt fishing "camp site with several houses and sweathouse" associated with *Etchulet*. *tawašnašrən* in Gould (1966a). See also Tushingham et al. (2013b).
Wilson Creek	*Daa-gheslh-ts'a'* "cove or inlet"	DO-GHÉCT'Ɛ-T'CO'	*ta'gesLsaitun* "opens backward (inland) there "	Village site at Wilson Creek, the southern border.

Notes: [1] Loren Bommelyn, personal communication. [2] From Tolowa Language Class (1972) and Bommelyn (1989), cited in Reed (1999). Tolowa Unifon Font, © 2009 Elk Valley Rancheria, California. For the Tolowa Unifon orthography, see Tolowa Language Class (1972). [3] Quoted text from Drucker (1937) unless otherwise noted.

The Tolowa and other Oregon Athabaskan peoples shared many cultural traits with the Yurok, Karuk, Hupa, Wiyot and other northwestern California groups which were unique to this part of California (see Chapter 2, *Ethnographic Context* on page 27). Minor differences include Tolowa dwellings (Figure 30), which were single pitched rather than double pitched like those of the Yurok, Hupa, and Karuk. The Tolowa had their own World Renewal (Ne-Dosh) ceremonies, usually held in December, separate from (but with the same purpose of) the World Renewal ceremonies of the Yurok, Hupa, and Karuk held in September. Wealth displays apparently were comparatively less elaborate in Tolowa ceremonials (Drucker 1937:225). Powers (1877:66) distinguished the Tolowa as being remarkably concerned with the pursuit of wealth: "Probably there are no other Indians in California so avaricious as those of Del Norte County. Money makes the chief among them."

From Del Norte County Historical Society. Drawn by W.H. Moore.

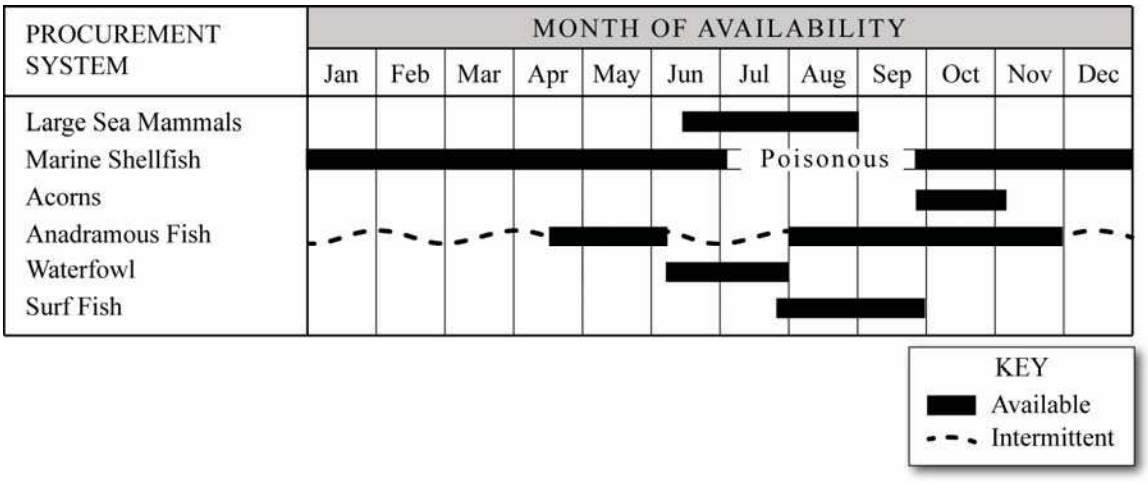
Figure 30. Family Houses and Sweathouse (right foreground) at Coastal Tolowa Village at Cushing Creek, 1854.

Coastal Tolowa

Gould's (1966a) detailed reconstruction of the annual economic cycle of Tolowa villagers who lived at Point St. George is arguably the best site-specific description of aboriginal settlement and subsistence from the California coast (Tushingham and Bencze 2013). Gould based this reconstruction on a combination of oral histories given by Tolowa elders, early ethnographic writings (c.f. Curtis 1924; Drucker 1937; Waterman 1925), and archaeological fieldwork at CA-DNO-11, a theoretical approach that is outlined in the first chapter of the Point St. George monograph, *Oral Tradition and Archaeology* (Gould 1966a:1-8). Tolowa consultants directly participated in his work; they supplied him with Tolowa words for various food items and artifacts, assisted with the interpretation of artifact function, explained the traditional layout of sites, and documented the history of the villages at Point. St. George. Detailed descriptions of the historic occupation of CA-DNO-13 were

supplied by several consultants, including Sam Lopez, whose father was born around 1853 and had grown up at southern Point St. George (CA-DNO-13; Gould n.d.).

An extensive range of seasonally available resources was exploited throughout Tolowa aboriginal territory. Major dietary staples include anadromous fish (such as salmon, steelhead and eel), acorns, sea mammals, shellfish, elk, deer, waterfowl, and surf fish (Figure 31). The diet was supplemented by many other foods such as seaweed, edible bulbs, berries, and the occasional whale. In fact "the Tolowa seem to have collected just about every kind of edible food that was available to them" (Gould 1975:66).



Tushingham and Bencze (2013); Redrawn from Gould (1978:68).

Figure 31. Major Dietary Staples and their Month of Availability.

Overall, salmon and acorns are ranked as primary staples (cf. Baumhoff 1963; Drucker 1937; Kroeber 1925). For the Tolowa:

> One soon is forcibly impressed by the basic importance of salmon and acorns. Next were marine products, smelt, mollusks, and so forth. The essential coastal distribution of the population was probably at once a cause and a result of the importance of these latter foods. The highly esteemed deer, elk and sea lions (the "ocean deer") were prized in proportion to the difficulty with which they were obtained. A miscellany of vegetable products, small game, and minor sea foods gave variety to the dietary. [Drucker 1937:231]

For the coastal Tolowa, Gould (1978) lists large sea mammals, marine shellfish, acorns, anadromous fish, waterfowl, and surf fish as major procurement systems or staples. Supplemental foods include land mammals, edible berries and plants and ocean fish. The majority of foods were obtained by individuals or small groups. Some salmon fishing (via weirs) and offshore marine mammal hunting was done collectively, though participation was always voluntary.

Coastal villages were inhabited by the entire community throughout the rainy winter months and were never entirely abandoned throughout the year. The seasonal round for Point St. George villagers began in the late summer when families fished for smelt at

temporary camps along the coast (Figure 32; also see Tushingham and Bencze 2013:Figure 1). Seasonal campsites were specific, owned places that belonged to certain families. Late summer is also the season when men from some villages formed specialized groups to hunt sea mammals at the distant offshore islands of Northwest and Southwest Seal Rock. Between September and mid-to-late November, families ventured to inland locations to fish for salmon and gather acorns (note that the salmon camp is in the vicinity of CA-DNO-339 and across the river from CA-DNO-26). While fish were dried at the seasonal camps, processing of acorns took place at the village, and during this fall fishing and acorn gathering period, women transported basket-loads of the gathered food for storage in the village (Gould 1966a, 1975, 1978).

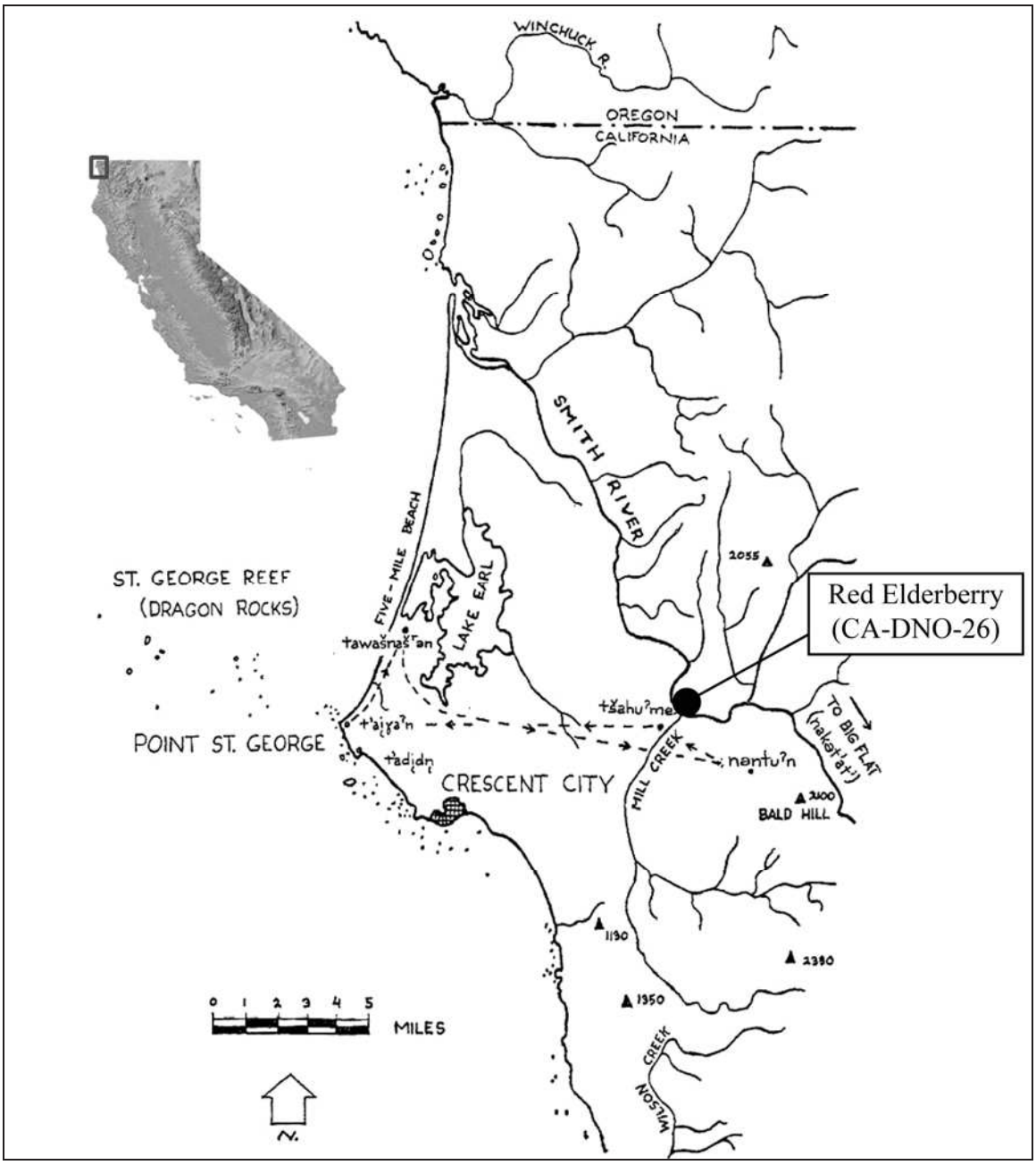
Gee-Dee-Ni' (Upriver Tolowa) Ethnography

While the Contact Period Tolowa are well-documented at coastal and estuarine villages, less is known about life in river villages. Drucker (1937) includes brief mention of the village of *Chvn-su'lh-dvn* (Red Elderberry Place or CA-DNO-26) and several fish trap sites on Mill Creek, but few details are given about these places. The goal of this section is to improve baseline data about upriver people and places, particularly in the project area. Fortunately, a great deal of information about Red Elderberry Place and its environs has been preserved in unpublished documents and oral histories, and this information was recorded in interviews with several members of the Tolowa community.

Methods and Consultants

Key sources referenced for the Gee-Dee-Ni' Tolowa ethnographic study include historical information in archaeological site records, the National Register of Historic Places Nomination for CA-DNO-26 (Bickel 1979), and the published and unpublished writings of Bommelyn (1989), Drucker (1937), Gould (1966a, 1966b, 1975, 1978, n.d.), Reed (1999), Kroeber (1925), Kroeber and Barrett (1960), and Waterman (1925). References to geographical places in Bommelyn (1989) and Reed (1999) were derived from the first edition of "The Tolowa Language" (Tolowa Language Class 1972), a manuscript which includes lists of Tolowa names, prayers, stories, and, most pertinent for this study, lists of place names with a corresponding map. This information was collected during a collaborative community project which began in the early 1970s. Participating elders included Amelia Brown, Sam Lopez, Ella Norris, and Ed "Goble" Richards.

Data was also drawn from interviews conducted with knowledgeable members of the Tolowa community, including Loren Bommelyn, Margaret Brooks, Richard Brooks, Nellie Chisman, and John Green, all of whom had relatives who lived in river villages. Dale Lesina, a non-Indian man in his 70s who grew up in the immediate area, also provided information. Interviews with Loren Bommelyn, Richard Brooks, and Nellie Chisman were taped, and transcripts are included in Appendix G of Tushingham et al. (2008). The remaining interviews were recorded using notes for practical reasons or at the request of the interviewee. William (Bill) Richards also provided valuable information early on in this project and his thoughts and insights are a guiding force of this chapter. To ensure accuracy, participants were provided drafts of the ethnography and their comments and revisions were incorporated into the text.



From Gould (1966a).

Figure 32. Map of Tolowa Territory, Showing Route of Annual Economic Cycle for Residents of *Taa-ghii~-'a~ (t'aiɣaʔn)* at Point St. George.

Interviews were open-ended and informal, however, interviewees were asked for information which focused on the following themes:

- Places: Knowledge of specific places where people lived; hunting, gathering, and fishing places; or other pertinent locations which were used in the past or present.
- Events: Knowledge of historic events which occurred in the local area.

- Land-Use Change: Knowledge of how the area has changed through time or has been altered in the historic period.
- Traditional Use and Community Identity: Information about the area as a Traditional Cultural Property, its importance to the identity of the local community, and identification of areas which are still used for cultural purposes (or would still be used if it were possible).

Information was gathered on three villages and camp locations, four fish trap locations and associated camps, acorn gathering and hunting locations, a cemetery and a burial location, three places of religious and historical significance, and a fire-managed meadow.

Included here is a summary of major findings for areas within the immediate area of Jedediah Smith State Park. Information on other inland locations is available in Tushingham (2009), including descriptions of ethnographic villages at *Lhe'sr-me'* (CA-DNO-28; ƟLÉR'S-ME') and *See-tr'ee-ghin-dvm* (Sitragitum; CEE-T'RE-GHIN-DUM), "Chief Phillips" Burial Rock (CA-DNO-25), and the Mill Creek fish trap locations of *Maa-ne Tes-dvm-dvn (mənī'tcestumtun)* and *Shu'lhts'ayme' (cu'ctaixōtme)*, and Twin Rocks at Society Hole (*See-k'wee-shvt-yaa-ghii~-li~;* CEE-GWÉ-SUT-YO-GHÍꓥ-LIꓥ). Summaries of this information are provided in Table 16 through Table 19. Information on native persistence in the aftermath of the Gold Rush and the formation of Indian-White Households is expanded upon in the concluding chapter.

Upriver Settlement and Subsistence

Traditionally, people who lived on the Smith River are known as Gee Dee-ni', or upriver Tolowa. Gee Dee-ni' lived on the South Fork of the Smith from Early Flat and Hiouchi east to the villages of Big Flat and Gasquet Flat and beyond. The Gee-Dee-ni' ocean frontage included *Etchulet*, *Tatatun,* and *Daa-gheslh-ts'a'* at Wilson Creek. In contrast, people who lived downriver from the fish weir site of *Nelechundun*, to the major villages of *Yontocket* and *Howonquet* at the mouth of the Smith River and on the coast were known as Da'-chvn-dvn Dee-ni'. The inland portion of the Da'-chvn-dvn included the middle and north fork of the Smith River drainages. Though all Tolowa (Dee-ni') shared a similar way of life and common language (Oregon Athabascan), Gee Dee-ni' emphasized riverine (non-coastal) resources and had a distinctive dialect which set them apart from their neighbors (Loren Bommelyn, personal communication 1997).

Villages and Historic Homesteads

Ethnographic villages and camps in the immediate area include Red Elderberry Place and Hiouchi. Additionally, CA-DNO-334 may be a camp or small village associated with the ethnographic fishing site of *Tvm-chaa-me'* on the Smith River (described in the section "Fish Trap Sites and Associated Camps").

Red Elderberry Place (CA-DNO-26; *TcuncuLtun*; *Chvn-su'lh-dun*; ƆUN-ƆÓT'Ɵ-DUN): Drucker (1937) describes the village of *Chvn-su'lh-dvn* as a "suburb" or offshoot of *Tatatun*, a major village site in present-day Crescent City located at Battery Point, both part of the same southern Tolowa village district. This is the same site as ƆUN-ƆÓT'Ɵ-DUN in Bommelyn (1989), Tolowa Language Class (1972), and Reed (1999). According to Drucker's Tolowa consultants, the post-contact village had two houses and a sweathouse. In northwestern California, houses were typically clustered in this way, with approximately

three houses for every sweathouse (Kroeber 1925). Ethnographic houses on average had seven people associated with them, with men and post-pubescent boys living in sweathouses and women and children living in houses. Thus the two houses and a sweathouse at Red Elderberry Place may represent an extended family house cluster with approximately 21 people living at the site in the Contact Period.

According to Drucker, "*TcuncuLtun*" is Athabascan for "pigeonberries there." However, Loren Bommelyn translates *Chvn-su'lh-dun* to "Red Elderberry Place" (*chvn-su'l* are "Red Elderberry," *dun* is "place"). The National Register Nomination for CA-DNO-26 notes that Tolowa consultants interviewed in 1978 readily supplied the name *TcuncuLtun* (said to mean "elderberry place;" cf. Drucker's "pigeonberry place") for the location. "Some said that it was once a village; others said, just a place used by people [presumably for fishing or gathering berries or other vegetal foods]" (Bickel 1979:2).

Table 18. Ethnographic Fishing, Acorn Gathering, and Hunting Places: Source Descriptions and Translations.

Anglicized Name & Trinomial	Practical Alphabet [1]	Unifon [2]	Drucker (1937)	Ethnographic Description [3]
Fishing Locations and Camps				
Tumchame CA-DNO-334?	*Tvm-chaa-me'* "deep water in"	TÚM-ↃO	-	Salmon fishing hole and possible camp.
Mouth of Mill Creek Salmon Camp	*Shaa-xu'-me'* "for me there in"	SÓ-XʊT-DÓH'-ME'	*ca':xōtme* "up to a riffle"	Fall salmon camp at the Mouth of Mill Creek owned by *Etchulet* villagers. "Fished, set nets, etc." *tšahuƋme* in Gould (1966a).
Upper Mill Creek Trap Site 1	*Shu'-lhts'ay-me'* "good drying place in"	-	*cu'ctaixōtme*	Mill Creek fish trap site owned by *Tatatun* rich man.
Upper Mill Creek Trap Site 2	*Maa-ne Tes-dvm-dvn* "across (the creek) ford there"	-	*mənī'tcestumtun* "across (the creek) ford there"	Mill Creek fish trap site associated with the Lake Earl village of *Etchulet*. "Fished, set nets, etc."
Smith River Eeling Place	*Ch'vslh-ghii~-chvn-dvn* "always packed at the foot of (the gorge)"	ↃUCƋ-GÍƲ-ↃUN-DUN	-	Eeling grounds on south and middle forks of Smith River.
Acorn Gathering and Hunting Claims				
Bald Hills	*Nan-t'uu-'vn'* "mt. meadow to"	NÓN-TʊU'-UN'	*nuntūtun*	Acorn gathering and hunting claims owned by *Tatatun* villagers "Principal camp, several houses and a sweathouse" *nəntuƋn* in Gould (1966a).

Notes: [1] Loren Bommelyn, personal communication. [2] From Tolowa Language Class (1972) and Bommelyn (1989), cited in Reed (1999). Tolowa Unifon Font, © 2009 Elk Valley Rancheria, California. For the Tolowa Unifon orthography, see Tolowa Language Class (1972). [3] Quoted text from Drucker (1937) unless otherwise noted.

Table 19. Places of Religious and Historical Significance, Cemeteries, Burial Locations, and Fire-Managed Meadows: Source Descriptions and Translations.

Anglicized Name & Trinomial	Practical Alphabet [1]	Unifon [2]	Drucker (1937)	Ethnographic Description [3]
Places of Religious and Historical Significance				
Widow Rock	*Ts'a~s-k'wvlh or Ts'a~s-kw'vlh-yu'* "widow"	T'CONT'ØI'GWÚT'ØI-YU	*sə:skwu'L* "Widow"	Prominent "female" rock outcrop in Hiouchi associated with the health of a baby. " Mother of angler...who became a boulder."
Doctor Place	*Nan-ts'vn-chuu-le'* "mt. large peak"	-	*nə''n'suntcūlet* "big hill on top"	A doctor place" associated with Widow Rock, lucky place for wealth.
Flower Rock and Spring	*Ch'anlh-da T'uu-'i'* "puberty water or the water of menses"	-	-	Rock and natural spring at Hiouchi Bridge associated with the Flower Dance, a girl's puberty rite. Spring water known for healing properties.
Twin Rocks	*See-k'wee-shvt-yaa-ghii~-li~* "stone/boulder flows between"	CEE-GWÉ-SUT-YO-GHÍN-LIN	-	Pair of rocks at Society Rock where two sisters were placed to keep them safe from Oregon men trying to steal them.
Cemeteries and Burial Locations				
Tcuncultun Cemetery	*Chvn-su'lh-dvn Ch'i~s-lu* "elderberry place cemetery"	-	-	Reported cemetery associated with *Chvn-su'lh-dvn* village.
Chief Phillips Burial Rock	-	-	-	Outcrop of rock where "Chief Phillips" was reported to have been buried ca. 1902.
Fire-Managed Meadows				
Hiouchi Flat Fire Yard	*Xa'lh-nvt* "controlled burn"	-	-	Fire-managed meadows east of *Chvn-su'lh-dvn.*

Notes: [1] Loren Bommelyn, personal communication. [2] From Tolowa Language Class (1972) and Bommelyn (1989), cited in Reed (1999). Tolowa Unifon Font, © 2009 Elk Valley Rancheria, California. For the Tolowa Unifon orthography, see Tolowa Language Class (1972). [3] Quoted text from Drucker (1937) unless otherwise noted.

According to Loren Bommelyn and Richard Brooks, it is unusual for places to be named after a resource. Most Tolowa places refer to the geography of the local area. For example, *Xaa-wan'-k'wvt (Howonquet)* roughly translates to "the place along there upon by the river" (Loren Bommelyn and Richard Brooks, personal communication). Loren

Bommelyn believes that Red Elderberry Place might have been named after a berry because they were collected in this area or were unusually common at this location:

> And, so Uncle Ernie Scott would be telling me about….*Xaa-yuu-chit* or *Chvn-su'lh-dvn* ….he's the one that pointed out to me, "I, I don't [know] why they call that place *Chvn-su'lh-dvn*? You ever seen an elderberry growing around up here?" You know, and…[laughter] …. I've tromped around all over there and there's no elderberry around there that I've seen….So, evidently, at some point in time, there was some, whole bunch of *chvn-sulh* growing there, you know, elderberry, the red elderberries. [Loren Bommelyn]

All Tolowa consultants who were interviewed for this project had ancestors who lived in upriver villages, though none knew people who could be identified as direct descendants of Red Elderberry. In late 1978 interviews conducted by Bickel (1979), Tolowa consultants also indicated "no knowledge about which families once lived on the site. However, a fenced cemetery associated with the village was maintained by the Tolowa as late as the 1930s according to multiple sources, including William Richards and Eunice Bommelyn (Smith River Tolowa).

According to the 1969 site record, the archaeologist Eric Ritter interviewed a local resident, Mr. Sawyer, who indicated "that a Mr. Zofti [Zopfi] lived near the site. Zofti [Zopfi] told him the last Indian (a renegade) lived on the site around 1902. He was chased into the forest and shot by local white residents." While unclear, the man killed in 1902 at Red Elderberry may have been buried at "Chief Phillips Burial Rock" (CA-DNO-25), a site that is located approximately one-half mile downstream from the Hiouchi Bridge in Jedediah Smith State Park (Tushingham 2009). The physical description and the location of the rock is analogous to *Ch'a~lh-da T'uu-'i'*, the Flower Dance Rock (see page 99). According to the CA-DNO-25 site record, a local resident (C. O. Young) indicated the rock "may have had ethnographic significance" and Phillips "may be Indian killed in area in 1902." If so, CA-DNO-25 could be the burial place of the last inhabitant of the village of Red Elderberry Place (*Chvn-su'lh-dvn* or CA-DNO-26).

Xaa-yuu-chit (*Hiouchi;* O-YU-CIT*;* Catching Ranch): Modern-day Hiouchi is a small settlement associated with the historic Tolowa place *Xaa-yuu-chit*, which, according to Loren Bommelyn, translates to "important/beautiful water," with *xaa-yuu* deriving from the words for a headman or person of high status and chit translating to stream, "so they really thought that was a nice river."

Xaa-yuu-chit is connected historically to the Catchings, an Indian-white family who owned a farming and ranching operation covering a large part of Hiouchi Flat by the 1870s into the 1900s (historical information on the Catchings is included in sections below). Based on information from Tolowa elders, Bommelyn (1989) and Reed (1999) refer to O-YU-CIT as a village "at Ketchen Ranch at Hiouchi" ("Ketchen" is almost certainly a misspelling of "Catching") and map the location at modern-day Hiouchi. *Xaa-yuu-chit* Dee-ni' refers to the people associated with Catching's place (Ketchen people; Loren Bommelyn, personal communication).

Richard Brooks had always heard that a historic village location was "behind the firehouse" in Hiouchi. According to Hughes (1974), the Catchings had their "family home and several cabins" in this exact location. A sacred place is also documented in the immediate area, *Ts'a~s-k'wvlh,* "The Widow" rock (see page 98).

Salmon Camps and Fishing Locations

This section of the Smith River and the Mill Creek drainage was, and continues to be, well-known as an excellent salmon fishing location. Ethnographically, the Tolowa fished the river using a variety of means including nets, basket traps, and harpoons. The fall Chinook run was a major event. After the First Salmon Ceremony, families from outlying villages travelled to the area to camp for several weeks to catch and process salmon for their winter food stores.

Tvm-chaa-me' (TÚM-ƆO; CA-DNO-334?): *Tvm-chaa-me'* is an ethnographic fishing location along a bend of the Smith river that borders the northern part of Jedediah Smith Campground. *Tvm-chaa-me'* translates to "deep water in" and is equivalent to TÚM-ƆO, described as a "fishing hole below Hiouchi" in Bommelyn (1989) and Reed (1999). *Tvm-chaa-me'* includes pools of deep water and a zone of shallow riffles, making it an ideal place for catching salmon.

Richard Brooks was told that there was a village in this area, though possibly closer to US 199. Loren Bommelyn's Auntie told him the area was named *Tvm-chaa-me'* and his Uncle told him that this was "a real good fishing place." Loren said that the site was used as a seasonal fishing and gathering camp into the historic period. Many people came from the coast during the fall salmon run and camped for as long as two months at temporary camps at Mill Creek and *Tvm-chaa-me'*. *Tvm-chaa-me'* is adjacent to site CA-DNO-334, so it is possible that the archaeological site could be an associated camp or small village.

Shaa-xu'-me (*ca':xōtme;* SÓ-XƱT-DÓH'-ME'; *tšahuʔme*; CA-DNO-339?): Coastal villagers owned several valuable salmon fish trap sites on Mill Creek, including *Shaa-xu'-me' (ca':xōtme), Maa-ne Tes-dvm-dvn (mənī'tcestumtun),* and *Shu'lhts'ayme' (cu'ctaixōtme)* and came to these areas seasonally to catch and dry salmon. All were within the same southern Tolowa village district and were owned by specific village headmen.

According to Drucker (1937:228), *ca':xōtme* "up to a riffle," located at the mouth of Mill Creek, was a location associated with *'Ee-chuu-le' (Etchulet)* villagers (#23 on Figure 29). The Tolowa Language Class (1972) identified the site as SÓ-XƱT-DÓH'-ME'. Loren Bommelyn (personal communication) names the site *Shaa-xu'-me* "for me there in" and mentions how every year coastal villagers would camp across from Red Elderberry Place to fish for fall salmon. Loren Bommelyn reported the name of this camp to be *shaa-xu'-me*', "an important Chinook fishing location until at least the 1920s when fish and game [California Department of Fish and Game] began to destroy the Tolowa way of life," analogous to Drucker's (1937) *ca':xōtme*. Gould (1966a) recorded the site as *tšahuʔme*, an important fall salmon camp at Mill Creek used by *Etchulet* and *Tatatun* villagers on the coast. Gould believed Late Prehistoric inhabitants at Point St. George also visited the site annually to harvest salmon. *Shaa-xu'-me* is located in the same general vicinity as site CA-DNO-339 (see Chapter 3). However, at this point very little is known about the archaeological site, so any association is unclear.

Acorn Gathering and Hunting Locations

The closest acorn gathering and hunting locations listed by Drucker (1937) near CA-DNO-26 are located approximately 3.5 miles to the southeast in the Bald Hills. Claims in the area were owned by *Tatatun* villagers at *nuntūtun* "in water (?) there" (#40 on Figure 29).

Known as a "principal camp," the site had "several houses and a sweathouse." The area noted as *nəntuʔh* by Gould (1966) is shown as approximately 2.5 miles from CA-DNO-26, an area probably also used by Point St. George villagers on the Coast (see Figure 29). Etchulet villagers owned rights to elk hunting and acorn gathering tracts between Elk Valley (*tūtne'sme*) to the Smith River (southwest of CA-DNO-26). Resident Red Elderberry Place villagers probably gathered acorns and hunted game in similar upland locations to the south of the Smith River, and may have maintained closer oak groves in the Hiouchi Flat area similar to one that still exists at Musye village near Gasquet Flat, approximately ten miles upriver. Acorns could apparently be obtained more locally; according to Loren Bommelyn there are patches of oak groves in the Jed Smith Campground area where people still harvest acorns.

Hiouchi Flat "Fire Yard": Referred to as *Xatlh-nvt* or "Control Burn" by the Tolowa, the maintenance of open areas by indigenous people is a common practice worldwide. Patches maintained by hunter-gatherers are often referred to as "fire yards," defined as "openings or clearings (meadows, swales, and lakeshores) within a forested area that are maintained by burning" (Lewis and Ferguson 1988:60-61). Fire yards create a mosaic environment in forest ecosystems. In contrast with naturally created mosaics, "man-made fire mosaics, at least those fire-maintained by hunter-gatherers, entail smaller, more frequently, and lightly burned patches of growth" (Lewis and Ferguson 1988:58).

The Indian inhabitants of northwest California followed a pattern of burning open areas within the forest and along grass-covered ridges. These "anthropogenic prairies," as one writer describes them for western Washington (Norton 1979), were regularly burned in order to attract game from surrounding, densely forested areas, mature forest stands that were purposefully left unburned or at least subjected only to infrequent lightning or accidental manmade fires (Lewis and Ferguson 1988:61).

Anthropogenic fire yards were common in various ecological zones throughout northwestern California. These man-made open spaces created an environment conducive to edible plant species. They had the added benefit of attracting large game such as deer and elk, which in effect improved hunting by increasing encounter rates.

Tolowa consultants identified one such "fire yard" at Hiouchi Flat. The fire-maintained meadow which was located between the entry kiosk of Jedediah Smith State Park east to Hiouchi and south to the north bank of the Smith River. According to several sources, the Smith River could be seen from US 199 not so long ago. For example:

> That was all grassland, clear from the parking area, when you'd pull into Jedediah Smith State Park, and there's a kiosk and there's a parking lot, the grass used to come right there….it ran straight across that field, past that maintenance station, [it] was all grass, clear to the river. [Loren Bommleyn]

In the past, Hiouchi Flat was much more open, the direct result of fire management which took place well into the twentieth century. Evidently the tradition continued after Tolowa people lost control of the area. Dale Lesina, who grew up in the area, said that in the past the "Old Timers" kept the area clear by burning on a yearly cycle. In the early- to mid-twentieth century, the area was kept clear from grazing and agricultural uses. Once the National Park Service took over this land, such activities ceased, and vegetation began to take over the area. Today much of Hiouchi Flat is covered with grasses, young trees, and scrub.

In discussions with Elk Valley Rancheria and Smith River Rancheria Culture Committee members, it was learned that burns took place on a regular cycle, every two to five years depending on the vegetation, and were timed according to the rains so the fire could be controlled. This pattern is consistent with the burning regime conducted by the Yurok, who reported that patches in the redwood forest were burnt every three to five years, while pine nut trees and tan oaks were burned on a three-year cycle. When burns were conducted near villages, they were timed to take place after the first heavy rains of the early winter (Kroeber 1939).

Ethnographically, the Hiouchi Flat Fire Yard was maintained by Red Elderberry Place and/or Hiouchi inhabitants to create an open area near the villages where plants could be collected and animals could be hunted. It was purposely created to decrease travel costs to patches while increasing within patch encounter rates and was an integral part of making sedentary village life possible. Burning likely took place on a regular basis, possibly after the winter rains every three to five years.

Places of Religious and Historical Significance

Several places were cited in the general area as having ongoing religious or ritual significance to the Tolowa people. Two of these places are prominent rock outcrops which hold special meaning: *Ts'a~s-k'wvlh* (Widow Rock) in Hiouchi and *Cha~lh-da T'uu-'i'*, (puberty rock or Flower Dance rock and spring) at Hiouchi Bridge. As Loren Bommelyn points out, it is interesting that both places are associated with female rituals or women in general.

Ts'a~s-k'wvlh "The Widow" Rock (T'CONT'ƛ'GWÚT'ƛ-YU): *Ts'a~s-k'wvlh* is a large, prominent rock outcrop just south of US 199 west of the volunteer firehouse in the modern-day town of Hiouchi. It is part of a Mill Creek system of doctoring Rocks in the area, including high points at Little Bald Hill and Childs Hill. Both *Ts'a~s-k'wvlh* and the village of *Xaa-yuu-chit* are located within the old Catching homestead.

The rock is barely visible from the highway as it is covered with dense vegetation. However, when the area was kept clear in the past with regular burning, the approximately 50-foot outcrop would have been a very prominent feature on the landscape. *Ts'a~s-k'wvlh* may be the same place as T'CONT'ƛ'GWÚT'ƛ-YU, "rock at Hiouchi" which is mapped in the general vicinity (Bommelyn 1989; Reed 1999).

Ts'a~s-k'wvlh is Athabascan for "the widow." The rock is a female entity which is associated with the health of a baby:

> Well, that, that rock's name is *Ts'a~s-k'wvlh* or *Ts'a~s-k'wvlh-yu*, and *Ts'a~s-k'wvlh* is "the widow," and it represents the spirit of the earth or of the female...you give offerings there [so that] you'll have good, strong children. So that's a place to give her a blessing...an offering, you know, there. And, so...she oversees the women, you know, of the people. [Loren Bommelyn]

Women or men could pray there "cause everybody has children, but it's a woman, it's not a, it's not a male entity, that rock. It's a female" (Loren Bommelyn). How and what people prayed for at *Ts'a~s-k'wvlh* varied: "Depends on what they're praying for and what they need... it's up to the woman that's going there to pray" (Lena Bommelyn). People may have

physically climbed to the top, "or you just pray there. You know, leave an offering, or clap your hands [which] is a real common practice" (Loren Bommelyn).

In Drucker's (1937) Map 2, the Widow rock appears slightly to the north, though the map is not to scale. According to Drucker (1937:230), Widow Rock has connections to *nə''n'suntcūlet*, "big hill on top, a doctor place" located in mountains northeast of Widow Rock. Loren Bommelyn spells this place *Nan-ts'vn-chuu-le'* and notes that it is the large mountain on the north side of the Winchuck River at the mouth. At this place "a young man once dug a pit in bedrock on this hill with elk horn wedges. Sitting there, he cast a line across the ocean to Dentailia's home, catching a large number of dentalia, which he kept alive in a cooking basket full of water. He later poured this water into the pit, making it a lucky place to train for wealth." The mother of this man is "*sə:skwu'L*, 'widow,' mother of angler above, who became a boulder. On passing, one had to 'feed' her tobacco, food, or blades of grass if one had nothing else—There were many dangerous places in the mountains; campers dared not talk loudly, nor laugh, or 'woods devils' came and put out their fire" (Drucker 1937).

In a personal communication to Thomas King, Richard Gould—an ethno-archaeologist who began working with the Tolowa in the early 1960s—indicated that widow rock "was a topic of controversy" when US 199 was constructed in 1924 (King 1972). At the time, the Tolowa had little recourse in protecting sacred sites from development.

Cha~lh-da T'uu-'i' Flower Dance Rock and Spring: At Hiouchi Bridge, there is a rock and natural water spring that are associated with the Flower Dance, a girl's coming of age ceremony. (The Flower Dance Rock is near the "Chief Phillips Burial Rock" [CA-DNO-25], and may be the same location.) Similar public female puberty ceremonies are common in northern California, but are rare in the north Pacific Northwest Coast, where a girl's first menses was typically marked with fasting, bathing, and other private purification rites. The Tolowa Flower Dance was a public ceremony which:

> Was held only for the daughters of rich-men, and in times of stress, as "when they heard sickness was coming." The performance of the ritual on this latter occasion was based on the belief that at this time a girl possessed a tremendous magical potency, which might thus be used in behalf of the people. A poor man's daughter might be "borrowed" on such an occasion. The ceremony was a most solemn one. Informants are emphatic in their assertions that this was not a "good-time dance." Its importance is reflected by the fact that the dance would not be interrupted even if a death should occur during its performance.
>
> Like other Tolowa ceremonies, the Flower Dance had strict protocols for all participants. The ten-night- and ten-day-dance was held in a dance house, the walls of which were covered with shell dance-dresses, etc. Girl placed on mat alongside-wall; hidden by mats covered with beads, dance-dresses, etc., hung from wall; lay there ten days and nights; warmed by coals of herbs on sand filled tray; ate only twice, on 4th and 7th days. All males, even small infants, had to leave house. Old woman recited formula over girl's food before she ate, and after ceremony. Girl drank only warm water; bathed daily before daybreak. [Drucker 1937:262-263]

After her first menses but before her Flower Dance, a young girl would go to *Ch'a~lh-da T'uu-'i'* for prayer and ritual cleansing. Girls would go to the rock and wash themselves in the spring water, which was regarded as having special restorative or healing properties:

> And, so, that they would go there and pray there and wash off and pray and ask for a long life, and healthy life and that kind of thing there. So that's why it's called *Ch'a~lh-da T'uu-'i'. Ch'a~lh-da* means menses, and *T'uu-'i'*, the water...' The water of menses. [Loren Bommelyn]

After this ritual was completed the girls would return to their village for their Flower Dance. Occasionally several girls would participate in a large Flower Dance at *'Ee-chuu-le'* "land large peninsula" (*Etchulet*), a major village near Lake Earl. Multi-community ceremonies were often associated with particular villages. For example, the annual World Renewal Ceremony was always held at *Yontocket*, the First Salmon Ceremony was held at *Tr'uu-le'* "fishing point" (Troolet), and '*Ee-chuu-le*' was known for the Flower Dance:

> Now, you could have your own Flower Dance in your house at your own village. There was no protocol restriction, but I think that was kind of the place known for the debutante's ball, to occur. [Loren Bommelyn]

As Loren Bommelyn implies, it is likely that girls who had their Flower Dance at '*Ee-chuu-le*' were from wealthy families. Though the Flower Dance was traditionally supposed to start very shortly after a girl's first period (within one day according to Driver 1939:352), it is likely that the larger '*Ee-chuu-le*' ceremonies were more flexible:

> And, then, if, any girl that started [her period], in that period of time, [they] could all go and have one common ceremony….and it wouldn't have to be just one person. So they kind of took care of 'em all in that process of bringing them into womanhood. [Loren Bommelyn]

The Flower Dance Rock was associated with a spring which was turned into a CCC fountain in historic times. The fountain was likely constructed after the first Hiouchi Bridge was built across the Smith River in 1929. A new highway from Crescent City to the bridge was also constructed at this time. The road from the Hiouchi Bridge to Gasquet was built in 1924 using prison labor. Thus the Hiouchi Bridge was an essential constituent of the Crescent City-Gasquet Road.

The spring and CCC fountain were used well into the latter half of the twentieth century by local Tolowa people, who regarded the spring as having healing power. Loren Bommelyn and Richard Brooks remember going to the fountain regularly:

> [The] water just shot up out of there, and we'd just pull in there and everybody'd drink, you know, and fill up their jug...it was a big deal. When they rebuilt the bridge, they destroyed it, did away with it. [Loren Bommelyn]

Richard Brooks' Great-Uncle Joe LaFountain would gather the water regularly, specifically for his ailing wife. He remembers visiting the spring as a child, as early as 1974 or 1975 and that his Uncle would talk about a nearby Indian village (likely *Lhe'sr-me'* or *Tvm-chaa-me'*) on their visits:

> I guess my first memory of a place being there at Jed Smith was, my great-great-uncle, Joe LaFountain, used to go up and gather a couple of things for his wife, my aunt. And she was sick the last few years of her life and they

> would go up and he'd get the water there from a stone water place they had, you know...it came down from the hill right there above the intersection of [highways] 197 and 199. And when we'd go 'round up there, he would say...that there was a place there—Indian, old Indian village there—and that we couldn't go over there and play. [Richard Brooks]

The fountain was destroyed during the construction of the new Hiouchi Bridge, which was rebuilt in 1989 after a truck ran into it and knocked it from its foundation (Del Norte County Historical Society, 2005 Newsletter, page 68).

The Flower Dance Rock and Spring was an integral part of the Flower Dance ceremony. Ritual cleansing or purification was a large component of the ceremony, and the sense that the water had healing or restorative qualities is likely connected to the specific ritual nature of this location. The exceptional nature of the spring water was well known by Tolowa people, and it was collected until 1989 when the fountain was destroyed. Though many ceremonies and religious rites went underground or were temporarily halted in the early to mid-1900s, over the past 30 years there has been a cultural renaissance for the Tolowa. For example, though not held for two generations, a Flower Dance was held for a young woman in 1994, and ceremonials take place about every two years as necessary, most recently in 2006 (Loren Bommelyn and Lena Bommelyn, personal communication).

Tolowa Districts and Connections with Coastal Groups

The ethnographic evidence consistently points to Red Elderberry Place and its environs as having connections with coastal villages south of the mouth of the Smith River, specifically the villages of *Tatatun* and *Etchulet*. According to Drucker (1937) Red Elderberry Place was a suburb of *Tatatun*; headmen from *Etchulet* owned many hunting, fishing, and gathering locations throughout this entire area, including rights to several fish trap sites on Mill Creek and inland acorn groves and hunting rights south of the Smith River close to Red Elderberry Place. Drawing on the ethnography and oral histories with Tolowa elders in the early 1960s, Gould (1966) reconstructed a similar pattern of land use for villagers at Point St. George (*t'aiɣaʔn*; CA-DNO-11), another village south of the mouth of the Smith River between *Tatatun* and *Etchulet*. For example, people from the village travelled overland to the fall salmon camp at Mill Creek (*tšahuʔne* on Figure 29) and acorn gathering camps at the Little Bald Hills (*nəntuʔn*) near Red Elderberry. These foods were transported in baskets by women to be stored at their coastal villages. The overland route was apparently less hazardous and faster than transporting stored items via canoe along the Smith River.

Loren Bommelyn explains that Red Elderberry Place was part of a southern "village district" or *yvlh-'i~* ("that which is looked over"). Although villages were politically quite autonomous, there were connections between certain villages:

> [W]ithin that *yvlh-'i~* everybody had exploitation rights that were from there. So if berries were ripe, your people picked berries first. If acorns were ready, or if smelts were running, or mussels were right, or whatever, that belongs to your people in that *yvlh-'i~*. Like, Lake Earl, *Ee-chuu-le*', they owned Elk Valley. They controlled all the water flowing out of Elk Valley into Lake Earl, for example. So they owned the ducks, and the geese, and all this stuff out there on the lake. [Loren Bommelyn]

Bommelyn describes two of the southern Tolowa *yvh-'i~*. The first includes Red Elderberry Place, *Tatatun,* and *Etchulet*. It stretched from the southernmost Tolowa village at Wilson Creek north to Lake Earl and east to Hiouchi and Big Flat. The second *yvh-'i~* extended between *Yan'-daa-k'vt* (*Yontocket*) at the mouth of the Smith River to *Duu-srxuu-shi* (Winchuck River) to points east along the Smith River to *Nii~-lii~-chvn-dvn* and *Mvs-ye* (Gasquet) on the North Fork of the Smith. Additionally, others were included along the Chetco, Pistol, and Lower Rogue rivers, into the upper Rogue to Applegate River in Oregon and beyond.

Tatatun and *Etchulet* villagers were known to fish at Mill Creek, while *Yontocket* and *Howonquet* people fished at downriver weirs:

> See, 'cause '*Ee-chuu-le*' people from Lake Earl, *Taa-'at-dvn* [*Tatatun*] people, all went to Mill Creek. And, then, then, the *Yan'-daa-k'vt* [*Yontocket*], the *Xaa-wan'-k'wvt* [*Howonquet*] *dee-ni'* [people] and all the *Nii~-lii~-chvn-dvn* [*Nelechundun*] folks and they all came to the dam [the weir at *Nii~-lii~-chvn-dvn*]. That's where they did most of their fishing. [Loren Bommelyn]

Ethnographic Gee Dee-ni' Land Use

The land-use pattern and annual subsistence round employed by the Gee Dee-ni' was likely similar to that of the coastal Tolowa. They probably ate many of the same foods on the same annual round, but with an emphasis on local resources, and pursued them in a logistical, task-oriented manner. As salmon and acorns were more accessible to Red Elderberry Place villagers, they were more important than coastal foods in their overall diet. As at other Tolowa villages, it seems likely that wealthy individuals at Red Elderberry Place may have owned rights to certain hunting, gathering, and fishing places.

Archaeological evidence at CA-DNO-26 demonstrates that people also obtained more distant coastal foods (e.g., sea mammals and shellfish). Because of the documented connections between *Etchulet*, *Tatatun*, and Red Elderberry, and the district organization described by Bommelyn, it seems likely that coastal resources would have been obtained in the area south of Lake Earl close to the coastal villages of *Etchulet* and *Tatatun*.

Salmon Fishing

In northwestern California salmon runs were spread out, making fish available throughout much of the year, though the spring and fall runs were most important:

> There was a creek salmon, *daa-sralh*. There's the big *daa~-xvt luu-k'e',* the fall Chinooks. The *shin naa-le* are the summer salmon and *tii~-sli~* which is steelhead and *lha'-xwas-chu* which is a trout and all these different fish. There was fish, fish, fish. [Loren Bommelyn]

The spring run, which is in modern times much depleted, came at a critical time, after the winter when food stores were low. Spring run salmon were called *dan'-dee-ni'* or "people of the spring" (Loren Bommelyn, personal communication). The fall run produces masses of large Chinook:

> [T]he big fish, the main fish is *daa~-xvt luu-k'e'*, and that's the Chinook fish that come in the fall. In English, they call them the hogs and that's the one they, you know the 50 pounders, the big ones. [Loren Bommelyn]

The section of the Smith River adjacent to Red Elderberry Place, Hiouchi, and *Tvum-chaa-me'* provided sought-after fishing patches including deep holes, riffles, and shallows where a variety of techniques were used to extract the resource. Catching devices included gill nets, basketry traps, weirs, and harpoons. Productive fishing patches were owned by local villagers and by headmen of coastal villages including *Tatatun* and *Etchulet*. Named fish trap sites on Mill Creek include the previously described *Shaa-xu'-me*', *Maa-ne tes-dvm-dvn*, and *cu'ctaixōtme*. The lowest eeling stations on the Smith River were at *Ch'vslh-ghii~-chvn-dvn* "always packed at the foot of (the gorge)" or ƆUCƀ-GÍИ-ƆUN-DUN, approximately three miles upriver from Red Elderberry Place on the South and Middle forks of the Smith River.

Coastal Tolowa people came to key fishing spots along the Smith River and its tributaries to fish and dry large amounts of salmon. Northern villagers, from *Yontocket* and *Howonquet* for example, concentrated at the weir sites of *Mvn'-saa~-dvn* and *Nii~-lii~chvn-dvn*, both downriver from Red Elderberry Place. Southern villagers from *Tatatun* at Crescent City and *Etchulet* at Lake Earl fished in the Red Elderberry Place area.

Before any Chinook salmon could be taken in the fall, a First Salmon Ceremony was held at *Troolet*, near *Yontocket* at the mouth of the Smith River:

> In those days [everything] had to be prayed for, but [Chinook salmon] had a very specific ceremony that was held at *Tr'uu-le'* down at *Yan'-daa-k'vt* and that was a big deal. No one could fish at the Smith River until that ceremony was done. Just period. Nobody. [Loren Bommelyn]

There were several first salmon ceremonies held in various places. Drucker describes the major annual ceremony held before the spring run[6] at *Wee-naa-xvsh-dvn (wenaxuctun/ Tr'uu-le'),* near *Yan'-daa-k'vt*:

> For rite, priest entered sacred sweat house, "praying" (reciting formulas), fasting five days. Then went to spear one or more salmon, while wife prepared other foods. (While pounding acorn meal, she might not pause even to change grip on pestle.) Priest's wife or daughter, in dance dress, carried fish from canoe to site of rite. According to some accounts, rite performed at spot near riverbank; others say in priest's house. Priest built fire, cut up and broiled salmon. When cooked, it was placed on basketry tray, with all other kinds of food (acorns, edible roots, berries, etc., those not ripe represented by leaves); long formula, describing origin of world and of foods, of Salmon's journey from home in s [south] northward to Smith r. [River], up Smith r. [River], mentioning all place names passed; several hours required for recital. "He brought all the salmon up the river. Sometimes he 'pray' so hard the sweat poured off him. It sounded fine." At conclusion, priest chewed up some angelica root, mixed it with piece of cooked salmon and rolled into ball. 'Marked' spectators with pinch of mixture down each arm, each leg, up back over the head, reciting short formula for their health; what remained

[6] Loren Bommelyn believes that Drucker may have been incorrect about the major First Salmon Ceremony occurring in the spring. According to oral histories which were confirmed by many elders, the major ceremony was always held at the beginning of the fall Chinook run.

> was popped into person's mouth. Each, as he was 'marked,' ran to river, dived in, spat out mixture under water. When came up, clapped hands, shouted 'for long life.' Sexes bathed in different places. When all had bathed, priest divided up rest of food, to be eaten there, or taken home for kin unable to attend. Only adults allowed to attend. After this, everyone could catch and eat salmon; "he opened the season." Priest not paid for services. Priest, and formula, together with marking with angelica root, called *tcamai''iLcRī.* Priest hired to perform same rite (perhaps abbreviated) as mourners' purification dried salmon if no fresh. [Drucker 1937:261]

After the Ceremony was complete, people waited upriver at fishing sites for the runner to announce that the season was "open:"

> They waited for the young person, the runner was sent. Like say if everyone who went to the ceremony—not everybody went to the ceremony but a lot of people did. The young men, they had runners in those days, and that was their job, to send information, and they would run up the river and say "it was done" and they could start fishing. They even had smaller version of it at the mouth of Elk Creek where the harbor runs in for that site over there. Because anything you'd eat had to be prayed for. The first berry, the first bulb you pull up out of the ground, you say *Ch'a' xvm-nii-le'* "you shall grow again," and you acknowledge that every time. Everything was that way—smelts, sea lions, whales, salmon, everything that you would take its life—deer, quail—you would acknowledge it. So that was just standard practice….and Amelia and all the old folks said after the prayers were given at *Tr'uu-le'*, down at *Yan'-daa-k'vt*, then that runner would come. And they said, all that… See the Crescent City Indians are called *Taa-'at dee-ni'*. They would move over the hill. They'd move off, you know, come over, you know, right over Howland Hill. [Loren Bommelyn]

The sanction against fishing before the First Salmon Ceremony was upheld into the 1920s. Loren Bommelyn's uncle Johnny Frank told him that an old man named Mike guarded the fish dam at *Nii~-lii~-chvn-dvn* to ensure no one broke the rules:

> His name was Mike. That's all [Uncle] knew him by. And he'd stand there with a rifle, and he'd say, "Now, no one's gonna fish 'till that young man gets here," to let 'em know, you know, that they could fish. [Loren Bommelyn]

After the First Salmon Ceremony, large numbers of people came for several weeks to camp along the Smith and along Mill Creek. Entire families traveled to the area on foot over Howland Hill to fish and dry fall salmon:

> They said they was just packed in there. There would be tents and all kinds of stuff; people would just pack in the mouth of there, there, and, then, when those big Chinooks would come up, see, then they could get 'em. [Loren Bommelyn]

The mouth of Mill Creek, *shaa-xu'-me' (ca':xōtme; tšahu?me),* was a particularly well known spot, and people fished there traditionally until at least the 1920s (Loren Bommelyn). Both Drucker (1937) and Gould (1966) cite the area as an important salmon fishing location used by coastal villagers from *Etcuhlet*, *Tatatun,* and *t'aɨɣaʔn* in Point St. George.

Harpoons, nets, and small weirs were common techniques used among post-contact Tolowa at these places. Weirs ranged from the large fixed weirs at *Mvn'-saa~-dvn* and *Nii~-lii~-chvn-dvn* which were constructed and used by members of several villages to small weirs built and used by a single family.

Double-fence weirs were constructed using a high and low fence and long basketry trap (Figure 33). Spawning salmon jumped over the lower (downstream) fence and became trapped in the weir as they could not jump over the higher (upstream) fence. Fishermen then drove the fish into the basketry trap which could be as long as 14 feet (Kroeber and Barrett 1960:24). Corralling fish into the traps, particularly large salmon, which on the Smith could be as large as 60 pounds, could be quite perilous.

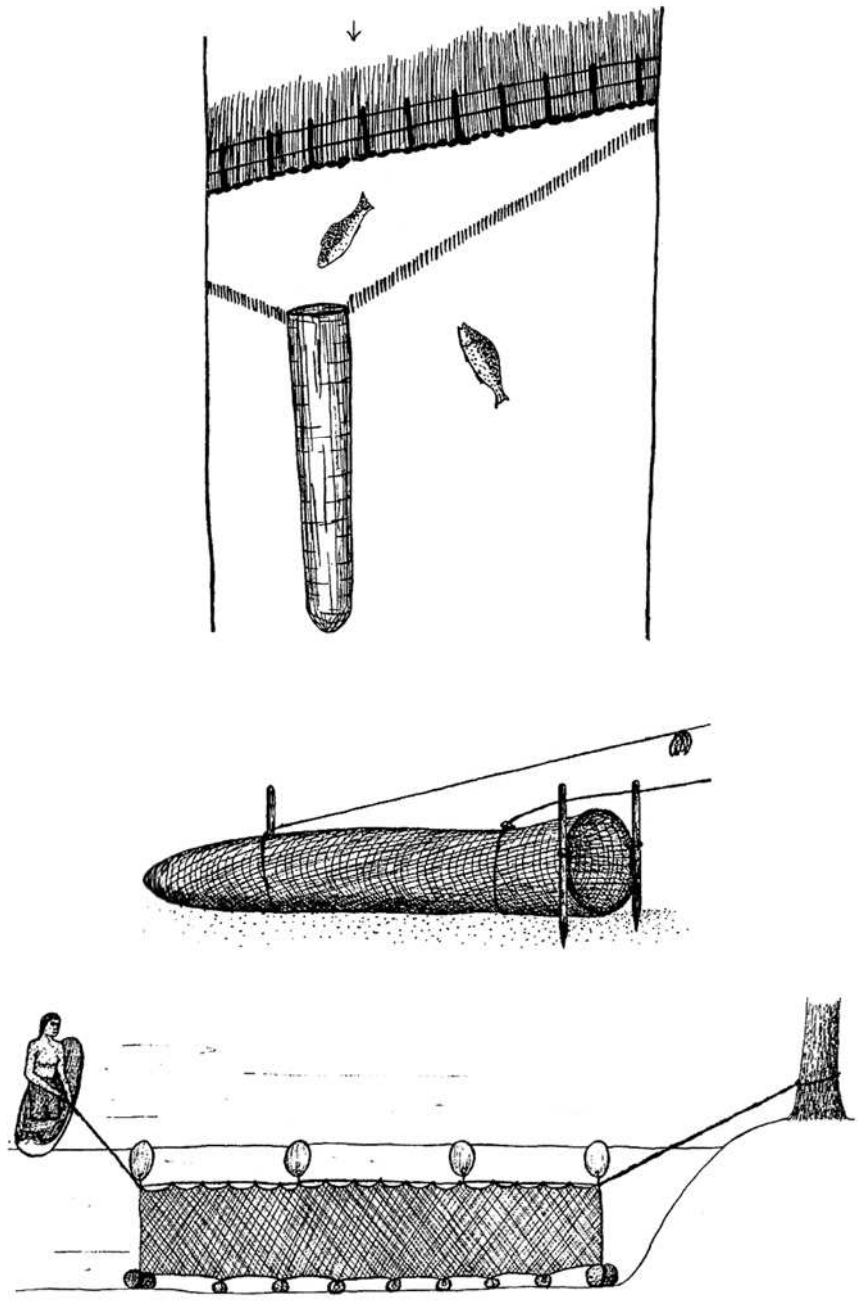
> [T]hey'd corral 'em in that [weir] and then they'd start to take 'em like that….try to get 'em all into a shallow area and….I mean, it was younger guys [who would] go out there and bare hand a sixty pound salmon or something. [laughter]….I gotta tell you, that's scary, when you see a sixty pound salmon coming at you….They bite at you....my mom….when we used to fish together down in Klamath, we'd pull that fish up and he was fifty-five pounds cleaned and after laying in the bottom of the boat for a while…..she bit at my mom. I mean, my mom was, pretty good shape then and she kicked that fish and it bit at her, and…we ended up having to flop 'em around….to…get it out of the way, but….I can't imagine going into the water and catching a sixty pound fish! [Richard Brooks]

Basketry traps were used at the *Nii~-lii~-chvn-dvn (Nelechundun)* weir. Loren Bommelyn described what happens after the fish were caught:

> [T]hey're called *lhuk naa-ghee-de'*, the big long baskets, they're, like an eel basket, but they're made for salmon. And they'd make them out of willows. But they were long. They were probably, like, probably eight to ten feet long and, you know, probably, this big around. And, then, they would lay those in the dam, too, and, then, those fish would run in there. Then, the men would go out and just pick the whole basket and then dump it out on the shore...and they could club 'em, too, and catch 'em, and, you know, harpoon 'em. [Loren Bommelyn]

Basketry traps were also used on small streams. One type of weir reported to Hewes (1947) was built called *naa-dii~-'a~ (naa'tīna)*, which was built straight across a small stream typically by a single man. The weir involved two rows of stakes with brush placed between and a seven-foot-long basketry trap set the downstream end of the weir (Figure 33).

The fisherman wound a cord around the trap with a crab claw rattle and ran the cord to a stake on shore. The rattle functioned as an "alarm" which alerted the fisherman that salmon had been trapped. Unlike the double weir, there was no upstream fence to stop fish from going upstream, so the *naa-dii~-'a~* could only trap "spent salmon or descending steelhead" (Kroeber and Barrett 1960:24-25).



Top: Tolowa Double Fence Weir ('vs taa-ghii~-'a~) and Salmon Basketry Trap (Lhuk-naa-ghee-de').
Center: Tolowa Basketry Trap used with the Weir (naa-dii~-'a~).
Bottom: Tolowa Gill Net.
From Kroeber and Barrett (1960:24,25,51), after Hewes (1947).

Figure 33. Tolowa Weirs, Traps, and Nets.

Richard Brooks believes it is possible that people captured salmon on Mill Creek after they had spawned. He said that the meat breaks down a little bit, and while it is not fresh, is fine for smoking. This simple type of weir is likely the sort that would have been used on Mill Creek and is similar to the description of small stream weirs by Loren Bommelyn:

> [T]hey would make a small weir, we called it *naa-dii~-'a~*. And that's, it's just 'cause the stream is small...and they would build 'em on any small stream, like...Little Mill Creek, they built 'em on there, Mill Creek, on Rowdy Creek, you know, they would build these *naa-dii~-'a~*, it just means "standing up. And then they would take crab claws and hang 'em on there, and when the fish were hitting it, then, they'd hear it, clattering, you know. [Loren Bommelyn]

These simple, expediently built weirs were dismantled or left to fall apart once people were done fishing.

According to Hewes' field notes (reported in Kroeber and Barrett 1960:52-53), the Tolowa used gill nets in a variety of ways, and net length depended on stream location and the size of the species being fished. The largest Chinook gill nets, *daa~-xvt luu-k'e' me'sr-xat (tã kaitloke-mexá')*, were reported to be 90 feet long by 13 feet wide. Kroeber and Barrett (1960:52) thought this width might have been overstated as even the Klamath has few places deep enough to accommodate a net this wide, and a net even approaching this size could probably only have been used in the lower tidal flats of the Smith River. In contrast, the smaller 60-foot-long by five-foot-wide *tii~-slii~-mvn me'sr-xat (tĩsi'mun-mecxá'*) gill net was used in the fall for taking steelhead, which "was always set in shallower water near the bank, for this is the water favored by this species" (Kroeber and Barrett 1960:52). Even smaller gill nets included nets of about 36 feet in length used in tandem with a brush fence to catch steelhead in the winter, a device called the *'vs taa-ghii~-'a~ (ustagĩ'á)* (see Figure 33, top image), and those employed for fishing at creeks running into Lake Earl which were a mere 12 feet long (Kroeber and Barrett 1960:53). Gill nets were often set and left unattended with a rattle, or they could be attended by a man in a canoe.

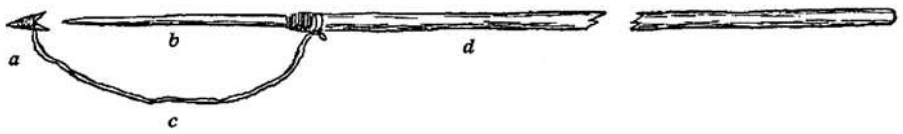
Nets were made of iris fiber or the inside of cedar bark and were weighted with notched or grooved net weights known as *me'sr-xat see-'e':*

> Nets (for fishing) made of grass (i.e., wild iris fibre), only get two strands out of flax, twist it, chew it to get green stuff out of it, make it (flexible). Some nets pretty good sized, maybe 20 feet long. [Amelia Brown in Gould n.d.]
>
> [Fishermen] would move along rivers, had real gill nets for different sizes of fish—mainly salmon and steelhead. Had gill nets before white men. 6 ¼ to 5 ½ inch mesh, took 2 to 3 years to make…Used the inside of cedar bark to make string, could make it as heavy or light as you wanted. [Sam Lopez in Gould n.d.]

Nets were highly prized and took a long time to make and maintain. Men who owned nets were regarded as wealthy:

> If a man had a gill net he was a real up and up Indian.... He could catch fish and sell them to different Indians who didn't have a net. If it was too cold to go out he could buy some fish from others. [Sam Lopez in Gould n.d.]

In addition to weirs and nets, harpoons were a common fishing method used in the area. Salmon harpoons were similar to sea mammal hunting harpoons in that they are line-attached devices. However, salmon harpoons were toggling devices, designed to turn sideways under the skin. (Sea mammal harpoons used in the region were barbed and thus did not toggle.) The harpoons were tipped with a stone or antler point (a in Figure 34) which was secured between two beveled pieces of horn in the foreshaft (b in Figure 34). A cord of twisted or braided elk hide was fastened around the point and secured to the hardwood shaft (Drucker 1937:237).



From Drucker (1937:237).

Figure 34. Tolowa Salmon Harpoon or *Ch'ee-t'a'-'a.*

There is a large hollow redwood tree across the river from *Chvn-su'lh-dvn* around the mouth of Mill Creek where people stored harpoon shafts, apparently to save on transport costs:

> [T]hey always talked about this, this *chvn-baa-'a~*, it's a hollow redwood that's still alive. And they just left this, the spear shafts, you know, when they'd go back home, and they'd just take the toggles off. You know. Or, they'd even leave 'em on there. And, then, when they came back up, they'd repair 'em and they'd, you know, they'd harpoon the fish. So that was huge, that *chvn-baa-'a~* for fish. [Loren Bommelyn]

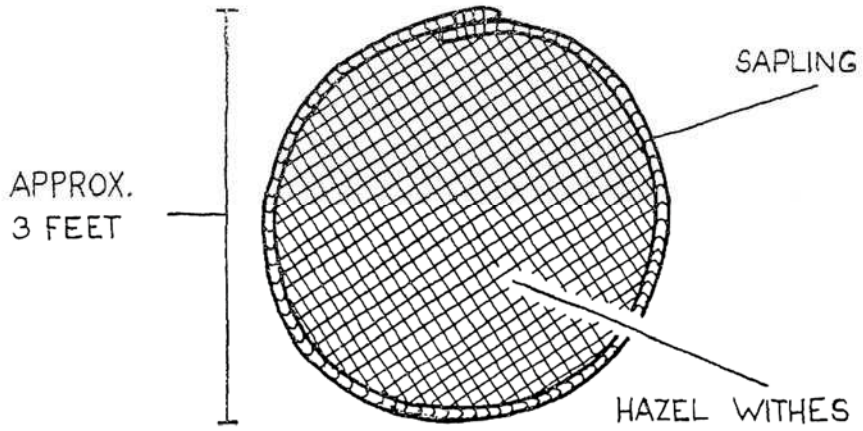
Fish were stripped and filleted in preparation for drying and storage. Tolowa mixed ground fish bone with fish scraps to make hash (Driver 1939:381). Though salmon were plentiful, the Tolowa used all parts of the fish. The following description is of Tolowa salmon preparation. Salmon were:

> Split down back with flint knife into long wide slices, skewered with hazel sticks to hold flat, dried on frames in sun, sometimes partly smoked. Backbone, with attached meat, dried separately. Stored in baskets, pack frames, or suspended from overhead frame in house. Heads split, partly broiled, dried. Eggs dried on basketry trays, stored in seal-paunch lining. [Drucker 1937:234]

After stripping, the backbone and attached meat was often eaten on the spot. Head cartilage was boiled to make glue, and strips, heads, and backbones were dried on-site:

> [T]hey would...dry 'em on these racks. Uncle said they made these racks out of...young alders or young willows and they'd peel 'em, you know, de-limb 'em, and they just built a rack right over....They'd build a, kind of a long low fire. And they would just, they'd dry it out. And, then, they would haul it home. [Loren Bommelyn]

Dried salmon were put between two approximately three- to four-foot-long racks or packframes called *mvlh-min' (meími)* made of hazel switches and ferns (Figure 35).



From Gould (1966:90).

Figure 35. Tolowa Packframe or *mvlh-min' (meimi).*

In the early 1960s, Amelia Brown explained salmon fishing at Mill Creek to Richard Gould: "He (head guy from Crescent City) had a camp at Mill Creek, used to spear 'em right there on riffle. He would tell people there were fish there if there were many fish" (Amelia Brown in Gould n.d.). She also described the salmon drying techniques and packframes used to transport the processed fish:

> Made two of these, lay salmon on, then layer of ferns, more salmon, ferns, salmon—then take other one and lace it up around edge. Take it home, take salmon out and store it in baskets. Just a pack. They just lay whole salmon in that way after they smoke them—smoke 'em out there by Mill Creek. Get those big Chinook salmon. Cut backbone out, open it out like a book, smoke it that way. Then pack it in. Cut heads and tails off. They fix head and cook it right there. Take meat out of heads, smoke it, too, save it for winter. [Amelia Brown in Gould n.d.]

After the fish were dried, people would dance and celebrate before moving to their home villages:

> [A]untie and uncle said, they just dried fish, it was dried fish, dried fish, and dried fish. And when it was done, then, they'd have a big dance. That was a big reason to have a big ole ceremony…A lot of work…and they'd just, they'd just dance. You know, have a big ole time. And have a heck of a good time, gambling and all kinds of stuff. Then, they'd all move home. [Loren Bommelyn]

Acorn Gathering

Acorn gathering tracts were owned by *Tatatun* and *Etchulet* villagers south of the Smith River near Red Elderberry Place (Drucker 1937). Resident Red Elderberry Place villagers probably gathered acorns in similar upland locations and may have maintained closer oak groves in the Hiouchi Flat area similar to one that still exists at Musye village near Gasquet Flat, approximately ten miles upriver.

Acorn processing methods were identical to the rest of California. Most acorns were processed using intensive leaching methods, while simpler techniques such as boiling, burying, and water leaching were also employed. The ethnography is consistent concerning the basic importance of acorns, though other foods, notably salmon, were eaten with acorn mush: "Acorn was main living, was like flour now" (Amelia Brown in Gould n.d.). All informants reported that there were:

> Generally two meals a day, with acorn mush being regarded as the main course (without acorn mush it was not a meal) and bits of fish, seaweed, sea lion meat, berries, etc. being regarded as side dishes or seasoning. These were important, too, but were not as basic as acorns. [Gould n.d.]
>
> Main food is acorns, everything else goes with acorns. Have salmon, smelt, halibut, sea lion meat to go with it. Acorns were the main dish, eat smoked fish with it. [Amelia Brown in Gould n.d.]
>
> Acorns and fish all they had, acorns was the main thing but you got to have fish with it—just like cookies or pie. Acorns, just like coffee, you gotta have it or it ain't no meal. [Ed Richards in Gould n.d.]

Elk Hunting

Elk and deer were hunted with the bow and arrow and were also captured with snares, deadfalls and elk pits; dogs were used to drive game (Barnett 1937; Drucker 1937). Brush was regularly burned as a means to enhance forage areas to attract game.

Deadfalls are traps that were used to crush both small and large game (Barnett 1937; Gould n.d.; Figure 36). According to a Tolowa man from an interior site at Big Flat,

> We used deadfalls to catch deer, could break their back with 'em. Could catch almost anything this way, make 'em for bear and cougar, too. We sometimes dug pits for elk and deer, too. [Creed Wilson in Gould n.d.]

Elk pits are deep holes that were dug to trap migrating elk:

> Pitfalls dug in deer runways, covered with twigs, leaves; two pairs poles crossed sawbuck fashion, set across long axis of pit, to suspend quarry to prevent jumping out. [Drucker 1937:234]
>
> They had them elk pits up in the woods, we had some not far back of here. They had a couple of poles set across so the elk couldn't reach bottom—he'd just get stuck there. Why, if that elk could get on the bottom he'd jump right out—they could just climb right up that wall. They were about this wide (holding his, hands about five feet apart) and about from here to that wall (about eight feet). They were pretty deep, too. [Sam Lopez in Gould n.d.]

Gould recorded the location of an old elk pit in the early 1960s:

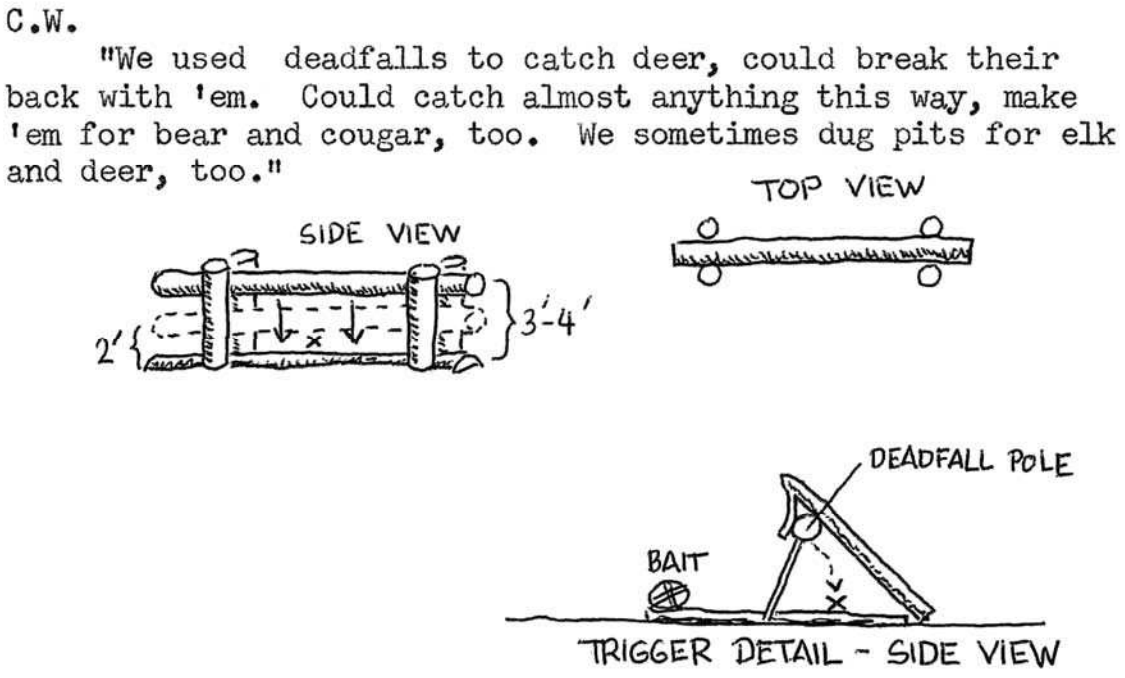
> In June 1964. I was shown the remains of an old Indian elk pit by Mr. Tom Peacock of North Bank Road. The pit is situated about ½ to ¼ mile S. of the S. bank of the Smith River opposite the Peacock Ranch. Although largely covered by ferns and partly caved in, the outlines of this pit are still clearly visible. The dimensions are 3 feet, 6 inches wide (give or take a foot owing to collapse) and 9 feet long (again allowing a foot either way for collapse). The pit remains to a depth of nearly 18 inches, but most of it has obviously

> filled in. The pit was located in the heart of the redwood belt on what many of the older whites and Indians in the area say was a good elk and deer trail. [Gould n.d.]

The locations of similar pits are well known to the community today. For example, at one location in Elk Valley (in the forest southwest of the project area), John Green and Brock Richards said the elk pit was located at a peak, which provided a natural funnel for hunting.

For the coastal Tolowa, Gould (1975) evaluates elk and deer as a "minor procurement system" along with other terrestrial mammals, berries and plants, and ocean fish, compared to major staples such as salmon, acorns, marine mammals, and smelt (see Figure 31) because they "are solitary game and cannot be hunted en masse. Stalking and pit-snares were used by individual hunters to good effect, but total amounts of meat taken in this way cannot have been great compared to even the lease productive of the staple food procurement systems" (Gould 1975:65). He contrasts elk with sea lions, the latter of which are gregarious creatures that congregate in known areas and seasons.

Yet elk and deer may have provided a more important part of the diet at Point St. George than recognized (Tushingham and Bencze 2013), and the means used to capture them may have been more effective than previously portrayed. For instance, modern Tolowa hunters describe elk pits as being a means to efficiently capture game (John Green, Brock Richards, personal communication). In other words, elk were not stalked indiscriminately across the landscape as is often assumed.



Notes and drawings from interview with Creed Wilson in Gould (n.d.).

Figure 36. Tolowa Deadfall Trap.

THE CONTACT PERIOD IN TOLOWA COUNTRY

The history of early Indian-white interactions in northwestern California is summarized in Chapter 2. This section provides a synopsis of major events in Tolowa Country, with a focus on the local area.

Jedediah Smith (1828)

The first recorded direct white contact with the Tolowa did not occur until 1828 when Jedediah Smith traveled through the area (Gould 1972:134-135; Hughes 1974). Jedediah Smith was an explorer, trapper, and trader, and was the first American to travel overland into California by way of the Sierra Nevada and Great Basin. He also was the first pioneer to travel up the California coast into Oregon and Washington. Jedediah Smith entered northwestern California by following the Trinity River, and then moved north along the coast into Del Norte County.

An account of Jedediah Smith's foray into the Smith River basin was provided by Johnny Cook (Hughes 1974). Presumably Johnny Cook is related to the Cooks (described below), a family of Indian descent who lived on Hiouchi Flat well into the 1900s. Apparently after Jedediah Smith and his party forded the Smith River, they set up camp on its north side, possibly at Peacock Flat (approximately two miles downriver from the Hiouchi Bridge and the location of an ethnographic Tolowa village, *See-tr'ee-ghin-dvm*). Jedediah Smith and two other men left the camp on a short upriver exploratory foray; they traveled through Hiouchi Flat, making it as far east as the Middle and South Forks of the Smith River. Prior to returning to the main camp the small party reached the junction of Myrtle Creek and the Middle Fork (Hughes 1974), which is just to the east of the project area.

After this event, the party headed north along the coast into Oregon. In Oregon 15 of the 19 men remaining in Smith's party were killed in a conflict with the Umpqua Indians over a stolen axe. Smith and the other survivors made their escape by travelling north to Fort Vancouver, a fur trading post owned by the Hudson's Bay Company.

The Gold Rush and its Aftermath (1850-early 1900s)

As described in Chapter 2, the effects of Euro-American contact, particularly during the Gold Rush Period, were devastating to local Indian groups. The Tolowa, essentially surrounded by major gold strikes in California and Oregon, suffered terribly. Crescent City, the location of the major Tolowa village *Tatatun*, was formed in 1853 as a port to transport supplies and people to mining centers in the remote north (Van Dyke 1891). Conflict with local Indians began almost immediately: "With the Tolowa of Smith River, there was trouble almost from the very beginning," with violence recorded as early as 1851 (Curtis 1924:91).

At least four major southern Tolowa villages suffered horrific massacres in the 1850s, when hundreds of men, women, and children were killed and their villages were burned. The massacres and upheaval of the 1850s are appropriately referred to as the Holocaust, or as "the time the world was turned upside down" (Reed 1999) by the Tolowa. One of the most well-known massacres occurred at the largest Tolowa settlement at the time, *Yontocket*, which had about 30 houses. *Yontocket* is the Tolowa place of genesis, where Creator made the First Redwood Tree and the First People. The First Salmon Ceremony was held near *Yontocket*, and it is the traditional site of the Tolowa World

Renewal Ceremony. In the winter of 1853, a large number of people were gathered for a World Renewal Dance. At dawn on the third day of the ten day celebration, an armed group of men from Crescent City who suspected the Indians for the murder of several prospectors, set fire to the houses. Men, women, and children were gunned down as they fled the burning houses. Hundreds died, and only a few Tolowa survived the massacre (Gould 1966b; Reed 1999). One man survived by escaping to a nearby slough. He took cover for hours, and later reported: "…I could hear them people talking and laughing. I looked in the water, and the water was just red with blood, with people floating around all over" (Gould 1966b:33). The village burned for days and it became known as "Burnt Ranch."

Other major massacres occurred at the villages of *Howonquet*, *Tatatun*, Battery Point, and *Etchulet*. Madley (2011) has recently assembled documentary evidence, much of it previously unpublished, of 19 violent encounters between Tolowa and white settlers beginning in the mid-1800s. While there were no recorded white deaths in these incidents, in all of these cases at least several Tolowa were killed. Through this work, Madley (2011) has shown that the Tolowa case clearly fits the United Nations definition of genocide, and other native peoples in California suffered similar atrocities (e.g., Madley 2008).

While the Gold Rush only lasted a few years in Del Norte County, miners were replaced by farmers, loggers, and ranchers. In the mid-1850s to 1860s, Tolowa survivors were relocated to a series of reservations in northern California and Oregon, including the Klamath and Siletz Reservations. Though major massacres were over by 1856, violence and prejudice continued. Scalps were taken as late as 1897 in Del Norte County, and murders took place after the turn of the twentieth century. Tolowa people were on the outskirts of society and had little recourse when such travesties were committed. Indians were subject to regular reservation roundups and forced slavery under the 1850 Act for the Government and Protection of Indians.

The combined effect of these tragic events and loss of traditional lands led to a dramatic population crash. Pre-contact population is estimated to have been 2,400 to 4,000 individuals for Tolowa (Baumhoff 1963:231; Cook 1956:101; Thornton 1980:703) and 10,000 for the entire Oregon Athabaskan region (Loren Bommelyn, personal communication). After contact, Tolowa numbers declined drastically, to an estimated 316 in 1856 and 200 in 1870. By 1910, a government census enumerated the Tolowa at 121 individuals (Kroeber 1925:883).

Indians who survived this time had to navigate a new landscape after having lost control of many of their traditional hunting, gathering, and fishing places. As Collins (1998:47) states:

> In the fifty years after Contact, the Tolowa were massively expropriated. They went from a village-based social ownership of use rights to the coast, coastal plain, riverine, and interior areas of a six hundred square mile region, most of present-day Del Norte County, to being in an internal diaspora, exiles in their own homelands.

Many villages were resettled after the massacres, including *Yontocket*, *Howonquet*, *Stundossun, Sxme, Etchulet, Nilichundun,* Pebble Beach, Big Flat, and Wagon Wheel near Hiouchi, and were occupied into the twentieth century (e.g., Tolowa Language Class 1972:3).

A diary detailing the goings-on of life at the Reservation Ranch, where many Tolowa were forcibly detained in the late 1800s, notes that the Indians "maintained a month-

long salmon gathering, suggesting that effective organization of large-scale net fishing was something the Tolowa continued in captivity" (Collins 1998:44). Local newspapers also reported smelt fishing camps and crab harvests in the 1800s. As Collins (1998:44) puts it, the historical and archaeological evidence points to a "persistent effort on the part of the Tolowa people to carry on living as they had lived, in extended kinship organized villages, with subsistence based on skilled fishing, gathering, and hunting."

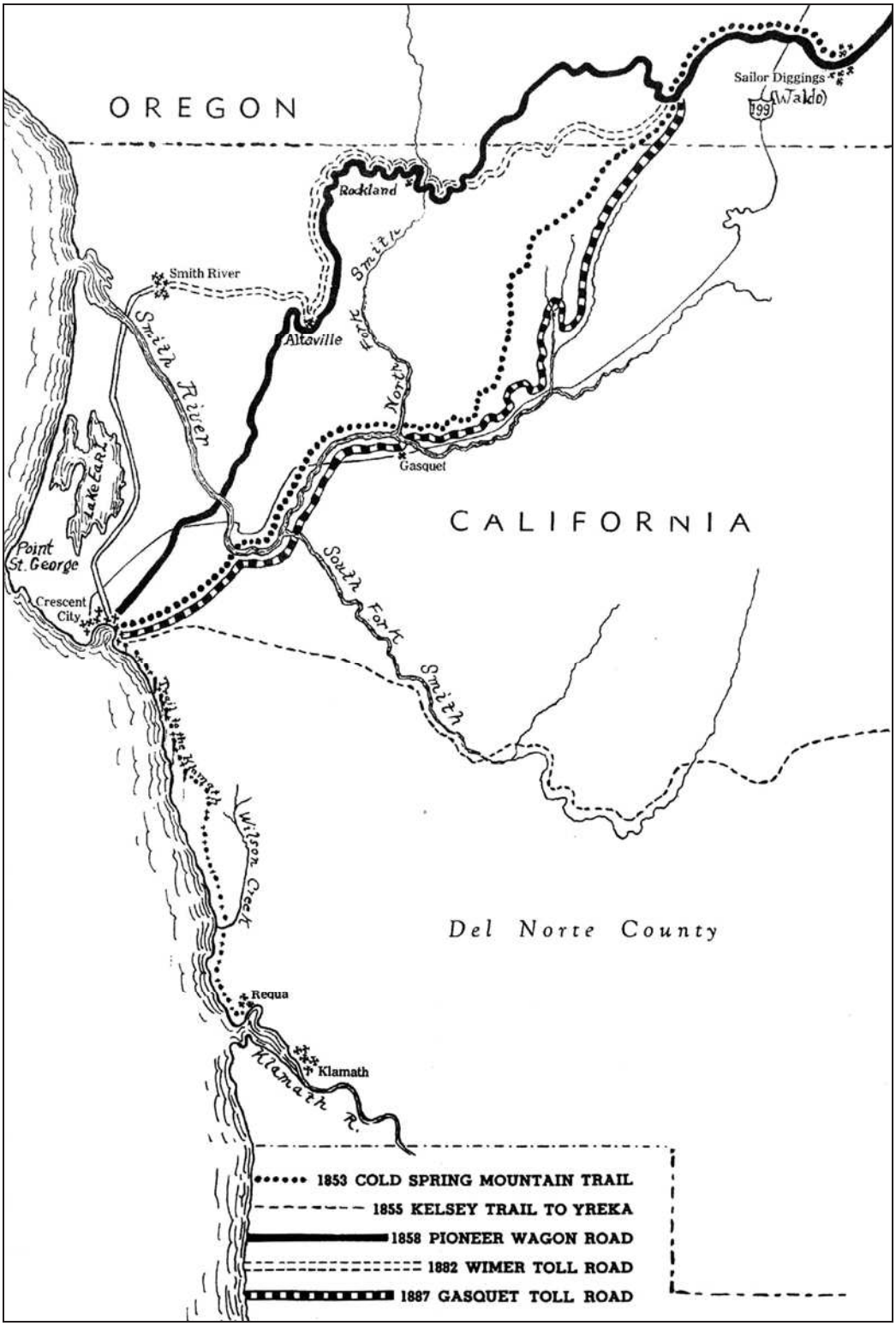
By the beginning of the twentieth century, many Tolowa engaged in the white-controlled, wage labor economy to supplement their traditional hunting and gathering livelihood and reliance on the wage economy increased from that time forward. The local cannery at Smith River employed mostly Tolowa Indians, who were skilled fisherman, as day laborers. The cannery operated between 1878 to the 1930s; when the cannery first opened, the Tolowa were paid with one salmon per day, which was likely seen as an injustice by a people who had fishing rights to all of the salmon streams of Del Norte County. Later, cannery workers were paid in salmon plus cash for their efforts. Tolowa also worked in the ranching and lumber industries (Collins 1998:44-56). Native American persistence during this period is a major research topic addressed in Chapter 7.

Early Trails and Mines

Mining centers were located in rough and forested terrain of interior California and Oregon. The sole means of reaching these centers was first by ship to the port of Crescent City, then by mule or pack train along newly constructed roads. Most miners passed through to large centers such as Waldo (Sailors Diggings) and Yreka, but there were several gold and copper operations in the local area. Most were small placer mines that were worked by locals as an extra means to get cash, but the largest of these was a gold mine at Myrtle Creek about two miles upstream from the Hiouchi area (Bledsoe 1881:21; Maniery and Millett 2008:7). Apparently this was the location where a Mr. Slinkard found the largest gold nugget recovered in the region (at Myrtle Creek), a 40-ounce piece worth $1,000 (Hughes 1974).

According to Hughes (1974), Chinese miners moved into the Hiouchi area once the beds were "worked out" by white miners. This is supported by the 1880 census record: one household (probably located between Hiouchi and Gasquet) consisted of 14 male Chinese miners, another household (probably downstream before Peacock Flat) consisted of six Chinese miners, and a male Chinese laborer was recorded at part of the Catching household. No Chinese people, however, were living in the area according to the 1890 census record. This was not a voluntary exodus; in 1886, the entire Chinese population of Del Norte County was forcibly removed and sent by boat to San Francisco, an event that followed the passing of the Chinese Exclusion Law in 1882 and similar removals enacted in other northern California counties (Carranco 1973).

Early trails to the large mining centers went directly through the Hiouchi area. In fact, the earliest of these, the Cold Spring Mountain Trail of 1853, crossed the Smith River west of Mill Creek directly at Red Elderberry (Figure 37). Way stations were built along the trail for travelers to eat meals, feed animals, and sleep. As Maniery and Millett (2008:11) point out, "it was more common to find a way station owned and operated by a local resident who lived on the premise and rented rooms or floor space by the night to accommodate the travelers, cooking them meals in the family kitchen." One of these way



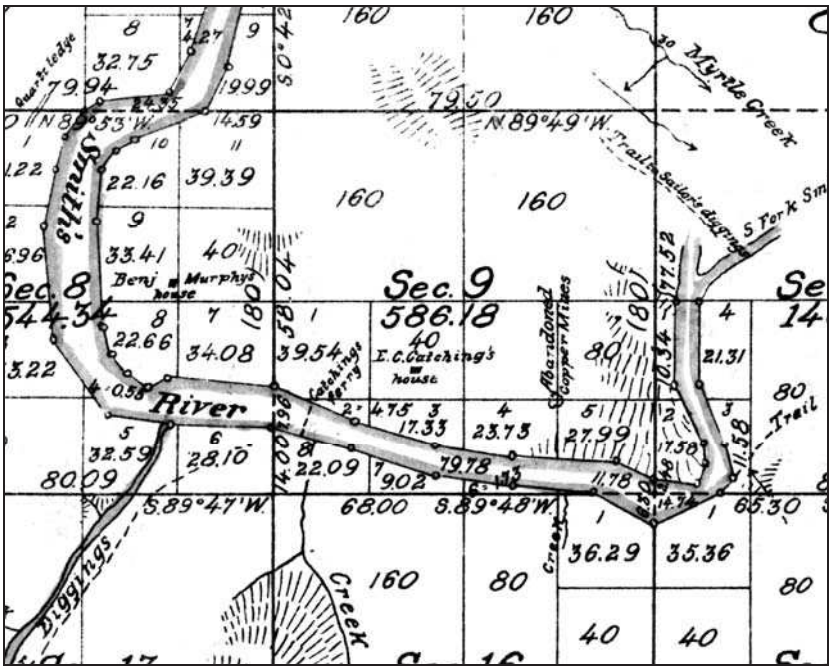
From Chase (1959).

Figure 37. Early Trails in Northwestern California and Southwestern Oregon.

Stations, Murphys Place, was probably located at or very near Red Elderberry, perhaps referring to Benjamin Murphy who was a squatter in this area around this time (Maniery and Millett 2008:11; Chase 1959:32).

Until the Pioneer Wagon Route was built in 1858, the Cold Springs Mountain Trail remained the main corridor for miners to reach Waldo and interior Oregon. However, even in the years following, this section of the Smith River remained an important transportation route. In 1887, Horace Gasquet constructed the Gasquet toll road, which followed the south bank of the Smith River avoiding Hiouchi Flat. The Catching family (see page 117) operated Catching's Ferry as a connector to the road beginning in the 1870s (Figure 38). Apparently this involved stretching "a heavy cable across the river, anchoring a couple of pulleys, mail, freight or passengers could be transported across the river at any hour of the day regardless of the weather" (Hughes 1974).

There is no question that resident Indians would have been affected by these new trails and the flood of people traveling through the area, but how and to what degree remains unclear.



Department of the Interior 1878. Note location of Catching homestead and Catching's Ferry.

Figure 38. General Land Office (GLO) Plat Map for T16N R1E.

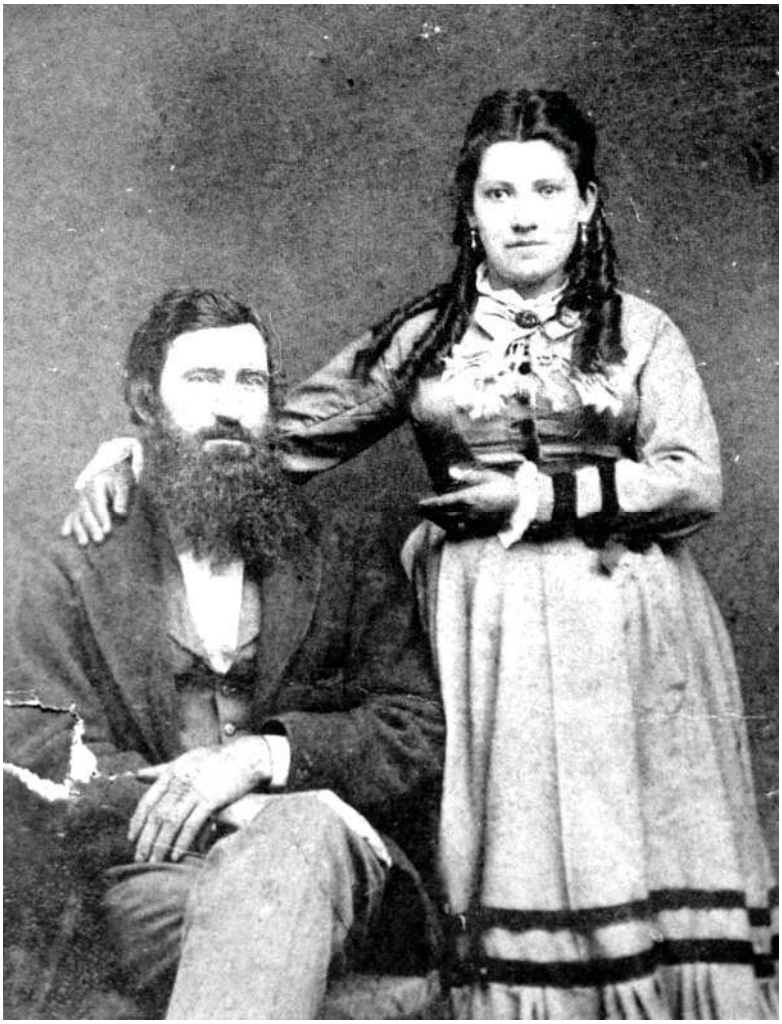
Early Indian-White Households on Hiouchi Flat

In addition to Red Elderberry Place villagers, there were other residents in the area beginning in the mid to late 1800s. Archival research suggests that while squatters and miners set up transient residences on Hiouchi Flat, long-term settlement of the area seems to have been largely by two Indian-white households: the Catching and the Cook families, which were firmly entrenched on Hiouchi Flat area by the 1860s-1870s.

Information in this section was gathered from Federal Census Records, General Land Office (GLO) maps, allotment records and land patents, and newspaper articles. Information about early Indian-white homesteads and genealogies was also gathered from interviews with Tolowa people, including Nellie Chisman, Loren Bommelyn, and Richard Brooks.

The Catching Family

The Catching Family consisted of Ephraim Cannon Catching, his Native American wife, Mary Moore, and their 13 children, who lived on a ranch at present-day Hiouchi (Figure 39 through Figure 41). Their home (Figure 42) and several cabins were near the modern-day firehouse next to Widow Rock (Hughes 1974); their homestead location at Hiouchi was referred to by Tolowa elders as a village "at Ketchen Ranch at Hiouchi," (Bommelyn 1989; Reed 1999; Tolowa Language Class 1972; see earlier section on *Xaa-yuu-chit*/Catching Ranch). Barns and outbuildings were located to the north (Figure 43).



Photograph courtesy of the Coos Historical and Maritime Museum Image 007-10.5.

Figure 39. Ephraim Cannon Catching and Mary Moore Catching.

Ephraim Catching was originally from Tennessee. He traveled via wagon train and was apparently the first white settler of Coos County, southwest Oregon. In 1855 he married a local Native American woman, Frances Quinton, who, according to early newspaper accounts was the daughter of a Coquille headman or chief. (As a Coquille, Frances would have spoken an Oregon Athabascan language similar to Tolowa). Ephraim and Frances had four children, all listed in the early census records as Indian, but after Frances died of consumption in 1868 Ephraim started a new life, with a new wife, in Del Norte County.

Photograph courtesy of the Coos Historical and Maritime Museum Image 007-10.6.

Figure 40. Ephraim Cannon Catching.

Ephraim married Mary Moore in Waldo Oregon around 1875-1876, and they had their first child in Del Norte County within the year. Several years earlier at age 14, Mary was living in Waldo with A. B. McIllwain, a dry goods merchant, and his family (1870 census, Josephine, Oregon). As the only Indian in the household she may have been a servant who worked in the shop or took care of the young children in the family. Another Indian child, Thomas Moore, age 5, possibly her younger brother, lived nearby with a 54 year old white man. In any case, it seems quite possible that both children were forced to work in these households after being orphaned or being taken from their families, which was a common practice during this time (see Chapter 2). It is unknown which tribal group Mary Moore was associated with.

Photograph courtesy of the Coos Historical and Maritime Museum Image 007-10.1.

Figure 41. Some of the Catching Family Children: Bertha Catching, George Catching, John Catching, Hattie Bollenbaugh Catching, and Effie Catching.

Photograph courtesy of the Del Norte County Historical Society.

Figure 42. Catching Home at Hiouchi.

Photograph Courtesy of the Del Norte County Historical Society.

Figure 43. Cooke Girls at the Catching Homestead.

The Catching farming and ranching operation grew to as large as 270 acres and covered most of Hiouchi Flat. The Catchings were the closest permanent settlers to Red Elderberry Place and would have been living on the flat at the same time as the last inhabitants of the village. Although it is impossible to know the nature of these interactions, it seems likely that the Catchings were friendly to, or at least tolerant of, local Indians, especially given the Native American ancestry of Mary Moore and the Catching children, all of whom are identified as Indians in the census records while they lived in California.

According to the 1880 census records, the Catchings housed or perhaps boarded various individuals, including a family of Indian descent. Thus, in addition to Ephraim (age 46 at the time), Mary (age 24), and their three children (William [age 5], Mary Ida [age 2], and Ruben [age 1]), the census includes five Indians in the household with the men listing traditional occupations of fishing and hunting: Mr. Scano (occupation="fishing"), Julia Scano (age 25, occupation="keeping house"), Frank Scano (age 30, occupation= hunting), Mary Scano (age 20), and Rose Scano (daughter, age 15). Clearly Rose could not have been Mary's biological daughter as their difference in age is only five years. It is possible that the census taker simply recorded their age or relationship incorrectly. If correct, Mary have been Rose's stepmother, or the "Scanos" reported themselves as immediate family members for some unknown reason, perhaps attaching themselves to one another and the Catching household to avoid the reservation roundups. Others in the household included a 38-year-old white miner from Ireland, a 43-year-old white rancher from Louisiana, and a 35-year-old Chinese laborer.

In 1974, Ralph Hughes, a resident of Hiouchi, published an historical account of Hiouchi in the January and February editions of the Del Norte County Historical Society Newsletter that gives an excellent glimpse into what life was like on the Catching homestead (Hughes 1974). As described, the Catchings led a self-sufficient rural lifestyle:

> A pioneer who had come to the Oregon country in the 1840s and had explored and lived in Coos Bay, Coquille, Myrtle Point and Roseburg, came to Del Norte and purchased land that, when cleared and developed, became known as the Catching Ranch.
>
> Mr. Catching began clearing ground and in the course of time had built a house, cabins, barns, poultry houses, and fenced in the various fields. The sidehill on the north was cleared of trees and planted to grass. This was used for a large flock of sheep.
>
> Pasture and barns for livestock were located on the north side of the present highway. Just west of the present Hiouchi Café was the location of the family home and several cabins. A shop and a store room made up the balance of the buildings.
>
> Fences were built all over the place to enclose the pastures, gardens and orchards. These fences were made of split rails and were built by laying the rails horizontally in a worm or zigzag fashion. Some of the higher and stronger fences were made by driving split pickets into the ground.
>
> The walls of some of the buildings were made of split Redwood planks that were placed in a vertical position. The planks used in the family homes were hand-planed to give the walls a smooth appearance. Split Redwood shakes covered the roofs of all the buildings and they were also used on the outside

walls of some of the structures.

A private school room was built for the children of the Catching family.

The gardens and several orchards were placed on the south side of the present highway. Near the house were planted apple, pear, and plum trees, and further east was the two-acre peach orchard that was located on the south side of the highway opposite the settlement now known as Fertile Valley.

Herb Pomeroy, a former timber cruiser, told me that when he was a boy he had seen this peach orchard and it had produced some of the biggest and finest peaches he had ever seen.

In addition to fruit, every kind of vegetable was produced on the place. There were crops of potatoes, tomatoes, corn, beans, peas, squash, pumpkins, watermelons, cantaloupe and many kinds of berries. Water was ditched in to the orchards and gardens, and fertilizer was gathered from the barns and corrals. Oak leaf mold was also used for a mulch in both the garden and berry patch.

This farm was self-sustaining. Nearly everything the family needed for food was raised here. Besides the fruit and vegetables, there were eggs, milk, cream, butter, poultry, beef, pork and mutton for meat. Catching hauled most of his produce to Crescent City, selling some of it to Hobbs-Wall and the rest around town. Wool, too, was a good source of revenue and was as good as money in the bank.

At that time there was no county road to the Catching ranch. The only way to Crescent City was by the old Grants Pass-Crescent City Stage Road that was on the other side of the river. To reach that road Catching stretched a heavy cable across the river, anchoring a couple of pulleys, mail, freight or passengers could be transported across the river at any hour of the day regardless of the weather. The cable is still suspended across the river and is only used now to keep tab on the rise and fall of the water in Smith River.

The first school was a private one and was operated for the Catching children. By 1891 several families resided north of the present bridge, with enough children to organize a public school. The necessary trustees were chosen and Edwin Moore was hired as the first teacher. Eph Musick as a boy attended this school and nine years later he served as a teacher for a year in the district. The Catching children received their schooling here and a number of the younger members of the family attended the Del Norte High School on J St. in Crescent City.

Mr. Catching was one of the first pioneers in this part of the west, coming into the Oregon country in the early 1840s. He pioneered and helped develop several settlements before coming to Del Norte. Since coming from his home in Tennessee as a young man, he had seen much of the development of the west and in his own way, helped make some of those developments come true.

Time has a way of changing things. After a long adventurous and useful life, Epherem [sic] Catching passed on to meet his maker and was buried on the flat just north of the present highway near the drive that starts up the hill to

> Sawyers. Several members of his family were also buried there. With the passing of the elder Catching the other members of the family moved away. [Hughes 1974]

Ephraim Catching died in 1902 of heart disease—the same year the last man to live at Red Elderberry was shot by local white residents. Mary sold her allotments and she and the children moved out of the area shortly after Ephraim's death.

The Cooke Family

The Cookes were Gee Dee-ni', upriver Tolowa, who had connections to villages upriver at Big Flat and on the Lake Earl peninsula. By the 1870s, the Cooke family lived in the Hiouchi area east of the Catchings. Both families shared a similar Indian ancestry and evidently were friendly with each other (see Figure 43: Cook girls at the Catching homestead).

Much of the information obtained about the Cookes and the life of an Indian family living at Hiouchi was obtained from Nellie Chisman, a woman in her seventies who now resides in Crescent City. Loren Bommelyn, Margaret Brooks, and Richard Brooks provided additional information. The data is corroborated by census and allotment records.

Nellie's great-grandmother was Kate Billy, the sister of the famous Tolowa man, Rock Billy, whose Indian name was *"Wayn-t'i"* or *"Wyentae."* Rock Billy moved to Big Flat after living at "Rock Billy Place" on the eastern shore of Lake Earl. Kate Billy was once married to Little Bob, but remarried Pete Sontash (Figure 44), presumably after Little Bob died. Kate Billy had at least three daughters, including Minnie Bob (Nellie's grandmother), whose father was Little Bob.

Minnie Bob married John Cooke, whose parents were Julia and George. John and his brother both had allotments in the Hiouchi area. John Cooke's allotment was in the eastern section of Hiouchi Flat near a present-day tackle shop, while Walter Cooke's allotment was upriver at Wagon Wheel (*Tee-nee-chvn-dvn* "road at the foot of" or TE-NE-ƆUN-DUN), between Hiouchi and Gasquet. Minnie and John Cooke had two daughters, including Letty Cooke, who married Harold Maurer. Together, Letty and Harold had seven daughters, including Nellie. Nellie was born at her home in Hiouchi in 1934 and lived with her seven sisters and parents in a small cabin with two rooms and two beds. She later moved in with her grandparents who lived on the same allotment.

Nellie's grandmother, Minnie Cooke, was an Indian who was born around 1870 at Big Flat. The Bobs were and continue to be a well-known Big Flat family. She lived to be 104 and died in the early 1970s. Minnie was brought up traditionally and could easily understand and speak Tolowa and Yurok. She and her husband, John, a white man, lived on an allotment at Hiouchi (Figure 45). After Minnie died, the allotment was divided and parts of it were sold. The final parcel from the original Cooke allotment at Hiouchi was recently sold. Letty's first cousin, Elsie Brown, also lived at Hiouchi and lived to be 102.

Minnie was a small, hardworking woman of few words. Margaret Brooks and Loren Bommelyn were told that she always wore a hat and makeup, including rouge in traditional circles on her cheeks:

> Gosh, [Nellie's] grandma [Minnie Bob] was something else. She was the last person that—Aunt Laura's always pointed that out—she used to always put that black on her eyebrows every morning and, then, she'd put red on her face right here...Well, she said, in the morning she'd get up and she'd pray

> and, then, she'd wash, you know, get herself ready, comb her hair and everything and, then, she'd always put that on her face. My grandma did that, too. And, then, put the red on there. And, then, whatever people wish for you, you know, they, it just bounces away...You know, if they don't like you, if they wanna hurt you…It's her protection. And I remember mom used to go visit her, and she didn't speak good English at all, and, so, mom had to talk to her pretty much in Indian, you know. And, she was kind of funny. She was kind of, not too open...but she'd talk to mom, and stuff. And, sure, she knew mom, because her brother-in-law was married to mom's grandmother at the end of their lives. [Loren Bommelyn]

Nellie also remembers this morning ritual, and her grandmother's traditional hair and makeup:

> Well, my grandma…her hair was way down to here. And every morning, I remember, she had a chair, she sat in, and she'd braid it. And, then, she'd wrap it around her head.

Courtesy of Nellie Chisman. One daughter is Minnie Bob, Nellie Chisman's Grandmother. Note Kate Sontash's traditional facial tattoos.

Figure 44. Kate and Pete Sontash with Daughters.

> And, I remember, she must've been in her early eighties or something like that, or late seventies, or something, not cutting her hair. And, [she was told] "No, you're not gonna cut your hair." So she never did get it cut. But she always sat there and put her rouge on and her lipstick and her mascara, or eyebrows [laughter]. [Nellie Chisman]

Nellie remembers that her Grandfather John Cooke was a "handsome man, real good looking. But…[pause] I think he only swatted me one time, all the time that we were out there" (Nellie Chisman). He served as a mailman and had a route between Hiouchi and Grant's Pass:

Courtesy of Nellie Chisman.

Figure 45. Minnie (née Bob) and John Cooke at their Hiouchi Allotment.

> And it took him—I can't remember, was it a week to get to Grants' Pass 'cause he had to do it by horse. 'Cause I don't even think they had a road then. And I got a picture, but you could barely see him and his horse...carrying the mail. And I think he picked it up across from the Hiouchi store. 'Cause they used to have horses, you know, there...I think the stagecoach was there, too, that one time, right there. You know, where the Hiouchi store is. [Nellie Chisman]

John Cooke had a still and occasionally panned for gold at French Hill:

> My grandma and I'd walk way up the hill there from her house, you know. We'd have to go up on the highway, then, cross the bridge, then, go up the hill between the bridges. There's a trail there...my grandfather'd go ahead of us. [Grandma would] pack a lunch, you know. And it was, oh, my gosh, [it] seemed like miles gettin' clear up there to the top...and, then, we camped in this old part of a house, or whatever. Yeah, and he panned for gold. And somebody stole his gold, Billy Doolittle. [phonetic] He stole almost everything from them, or tried to. [Nellie Chisman]

Hiouchi was quite remote, particularly before the Hiouchi Bridge was built in 1929. Like many rural families at the time, her family was self-sufficient and did what they had to do survive. Her grandfather hunted and the family kept a garden and grew strawberries. Her grandmother sold the strawberries and huckleberries and made her own bread. She canned applesauce and whatever else grew in the garden. Clothes were washed by hand using a scrub board. Her grandmother made quilts without a machine. There was no electricity or indoor plumbing.

Nellie remembers the cabin she lived in with her parents as being small and sparsely furnished. It had two rooms, one with a stove and a table. There was a small room on the side of the house that her father used as his bedroom. After a time she moved into her grandparent's cabin. The cabin was built by her grandfather. It was small and L-shaped, with a kitchen, front room, three bedrooms and a kitchen. Nellie recalls a woodstove, a small cabinet or milk safe, and a big table.

When Nellie or one of her siblings was born, her grandfather had to get the midwife in Crescent City by boat because they didn't drive:

> But, he had to take a boat across the river—the Smith River. And, go get [the midwife]...and grandma delivered [the baby]...he walked in the house, he's, ["oh darn!"] 'cause he had to turn around and take her back across the river and the weather was bad, so the river was rough...he had to row across and row back. [Nellie Chisman]

Nellie and her family went to Crescent City about once a month. They drove in with Mr. Short to Crescent City to buy supplies such as laundry soap, beans, canned milk, and flour. Nellie didn't recall eating salmon or acorns, but she did remember that her grandmother used to fry up eels. The food they ate was plain and unseasoned. Her family ate a lot of plain beans and sliced potatoes which were simply boiled in water and unseasoned. Nellie ate oatmeal mush every morning for years, and "for a while there, I couldn't eat mush

for years [laughter].” Every once in a while they would buy a “pound of hamburger or something, which we had to eat up right away. And that was a treat” (Nellie Chisman).

The Zopfis were a family that lived at Hiouchi Flat on a parcel presently owned by the National Park Service. The Zopfi house was a large two-story Victorian. They had indoor plumbing and were regarded as rich by their poorer neighbors. Nellie remembers never being allowed to go to the house. However, Nellie did attend school at a one room schoolhouse on the Zopfi property, which was just down the road from her house. Children in the first through eighth grades went to the school, and they were all taught by the same teacher, Mrs. Robinson.

Both Indian and white students attended the school. Nellie, her siblings, and her cousins from Douglas Park were the only Indian children at the school. Despite pervasive discrimination against Indians in many places in Del Norte County at the time, Nellie felt that she was not treated any differently than other children at the school. Nellie remembers that although her teacher was extremely strict, the children liked her:

> When you walked in that door, you said, “Good morning, Mrs. Robinson.” When you walked out, you said, “Good night, Mrs. Robinson.” And when she said something, you did it.
>
> Yeah, you learned. I mean, we had to memorize a lot of stuff... she’d always have everyone doing something. [A]s she was going, among the classes, teaching ‘em. And the ones that were there, were doing homework or studying. [Nellie Chisman]

Boys and girls sat on different sides of the classroom. The schoolhouse was simple, with a woodstove in the corner and a small closet for coats and lunches. During recess and lunch, the children were allowed to go to the store in Hiouchi to buy candy if they had money. They usually just played games and were allowed to wander the area:

> [W]e might’ve had a swing. And we played, kickball. The whole class would get out there...after we had lunch, you know, then, we’d have to play kickball. But, see, well, there was wasn’t hardly any sports out there, because...she’d just turn us loose and we’d play Hide ‘n’ Go Seek, you know, ‘cause there’s all those woods there. And, she never said anything about us going into the woods, you know. As long as we were back, you know, ‘cause the bell would ring, and, man, that mean, “You get back here, right now.” [Nellie Chisman]

After eighth grade, Nellie traveled by bus to Crescent City to go to high school. Nellie learned a lot about Indian ways through the influence of her traditional grandmother. She expressed regret that she did not learn more of the Tolowa language from her fluent grandmother, but still knows many words and phrases. Overall, her childhood in Hiouchi was similar to other children who were raised in a rural setting with little money in the Depression era. She recalled that: “We never had any money, but we never went hungry... so, what more could you ask for—a roof over your head and food in your mouth?” (Nellie Chisman).

TRADITIONAL USE AND MEANING OF THE AREA: THE TOLOWA COMMUNITY TODAY

Today the Tolowa are a thriving community, interested in their past and preserving their culture. The Elk Valley Rancheria, Smith River Rancheria, and Tolowa Nation all have active cultural programs and sponsor a wide variety of cultural rejuvenation initiatives, including Ne-Dosh (World Renewal) dances and ceremonies. Initiatives include protection of cultural sites, tribal hunting, fishing, gathering and subsistence rights, and development of an interpretive center.

The Tolowa actively participate in the management of cultural resources and planning in partnership with Redwood National and State Parks. Much of this work is done through Tribal Heritage Preservation Office (THPO), programs of the Elk Valley Rancheria and Smith River Rancheria, in direct consultation with Tribal Councils.

Despite all of the changes that have occurred in the area, interviewed Tolowa consultants consistently express a deep connection to the Hiouchi and Red Elderberry Place area, its sacred places, the archaeological sites and the natural environment: "Well, it's important to know that historically, it played a role, but it still does today" (Lena Bommelyn).

The area is recognized not only for its significance to Tolowa history, but also for its importance to the community's continued sense of identity. Family gatherings and traditional dances are regularly held at the Jedediah Smith Campground (Figure 46 through Figure 48). The area also remains in use for religious and other traditional purposes. Members of the Tolowa community continue to visit the area to pray, to enjoy the environment, and to gather food, medicine, and other traditionally used materials:

> [L]ike I say that prayer rock is there, and of course the weather is always so beautiful in Hiouchi...the environment is so nice. And, even, today, when I could still walk in the redwoods, I'm so inspired, just by the fact...Well, I'm so glad they're still there and they didn't get cut down. You know, and somebody saved 'em. [T]hat was wonderful...And the fact that the river mussels still live in the, Mill Creek is nice. [T]he natural environment...is just a blessing to be amongst. [W]e go by sometimes _____, you know, pray there, and you know, gathered acorns there.
>
> People still practice their religion. They still use places for prayer, you know. And...the Parks people don't need to know how they do it, they just need to know that they use it, and that it needs to be available to them for that. You know, so, that's important. [Loren Bommelyn]

Many consultants expressed the desire to continue or resume traditional cultural practices in the area such as fishing and gathering. They are also deeply concerned about the preservation of the area, including local archaeological sites and religious places:

> I think that…it's such a pretty place there and…just to be able to walk through there and…through Shannon's work, know the ages of those house pits there, and it's fairly intact for how much use it gets. You know, those first years we were out there…you've seen hundreds of people in a week. Hundreds, from all over the country. I think it's a good money-maker for the park system…it probably sustains itself, but, at what price?...I think [its] a

> duty of ours to kind of keep that…to respect it...or what they would say about places...like a burial...your parent or your sibling or your close relative. [They] would have...kept their grave up…and went out there to work and respected it. And, then, just waited for it to go back to the way it was. And, with all those people that go through there, it's not going back and, and it's being forced...I guess my main concern would be just that that return in its natural way. [Richard Brooks]

Richard Brooks expressed regret that this knowledge was lost for *Chvn-su'lh-dvn* and the responsibility he feels to protect the site:

> I was aware that right in that place there was something there. And I think, for me the thing that was kind of interesting was, up the river a little bit, and down the river, I knew who descended [from] those places, but I didn't necessarily know of anybody who was a direct descendant of that village at *TcuncuLtun*...I think that that site's important, because of that, because it's always, you know, in the old times...It was important to know where you came from, and to always be recognized kind of that way….So I don't know...I think it's...kind of left to the modern people now...the people that just have a roll number with the tribes to step in and to try to protect those places. [Richard Brooks]

Photo by Richard Gould, Image 5058.

Figure 46. Bernice Humphries and Harriet Smith at Traditional Tolowa Salmon Bake, Big Lagoon State Park, 1982.

The Tolowa Nation performs Ne Dosh or World Renewal demonstration dances every summer in Jedediah Smith State Park. The dances are held in an old growth forest overlooking the Smith River.

Figure 47. Tolowa Nation Demonstration Dance at Jedediah Smith State Park, 2005.

Courtesy of Linda Martin.

Figure 48. Annual Lopez Family Reunion at Jedediah Smith State Park, 1993.

SUMMARY

The subsistence settlement round of Gee Dee-ni', or upriver Tolowa village groups, was likely very similar to the system described for coastal Tolowa. Throughout the region, villages were politically autonomous and permanent, village members engaged in logistical forays to seasonal resources, and individuals within villages owned use rights (to whale claims, surf fish camps, acorn groves, and salmon fishing spots). Variation in the subsistence settlement round depended largely on the settlement location and the associated use rights of individual villagers. For example, salmon fishing techniques and dietary emphasis varied from village to village. At *Etchulet* village on the Lake Earl estuary, most salmon was obtained using net traps placed at a series of owned estuarine creeks and by nets set on Mill Creek, while *Yontocket* villagers owned the only large fish weirs on the Smith River. At upriver villages such as Red Elderberry Place, where salmon was a primary resource and involved negligible transportation costs, salmon fishing techniques included gill netting and harpooning, endeavors which were likely carried out by individual households.

Red Elderberry Place had connections to *Tatatun* at Crescent City and *Etchulet* on Lake Earl, and they likely traveled overland to exploit coastal and lagoon resources near these villages. Salmon was important, both to local villagers and for the people who set up seasonal fish camps in the area. Headmen at *Tatatun* and *Etchulet* owned rights to fish along Mill Creek. Key fishing technology included gill nets, harpoons, and weirs. People regularly maintained Hiouchi Flat with regular burns. Religion was a large part of villager's life, just at is was for other Tolowa. There were many places of ritual or ceremonial significance. Two of them include Flower Dance Rock and Widow Rock.

Most villages in the area were abandoned in the Late Prehistoric or early Contact Period, though people persisted in living at Red Elderberry Place into the early 1900s. They lived much the way they had before white contact. They employed similar subsistence activities, notably salmon fishing and acorn gathering, while incorporating new (historic period) materials and technology into their cultural system. The Contact Period was a time of great upheaval. On the coast, massacres at several village sites had decimated populations in the early 1850s, and forced removals and disease also contributed to the decline. Though Hiouchi was remote, Indians in the area did not escape the violence. The last man at Red Elderberry Place was murdered in 1902 by local white residents and may have been buried at Chief Phillips burial rock (CA-DNO-25). Killings are also reported at *Munsontun* and upriver near Big Flat and at Happy Camp.

After 1902, the Red Elderberry Place cemetery fence was still visible, and the cemetery was still maintained. Shortly after white settlement of the area, the fence was destroyed and permanent settlement in Indian villages ceased permanent settlement by indigenous inhabitants. However, traditional fishing continued in the area. Up until the 1920s, people converged at Mill Creek and along the Smith River to fish for Chinook. The fish camps were set up for as long as two months, and people busied themselves drying fish and collecting acorns and huckleberries. After the fish camps ended, people continued to fish in the area, but after Public Law 280 was passed in 1953 (amended 1968), traditional fishing came to an end. Public Law 280 transferred federal jurisdiction of criminal activities by or against Native Americans to certain state governments (including California).

The Cookes and Catchings families were of mixed Indian-white descent. Both lived a generally simple, self-sufficient and rural lifestyle. The Catching family moved out of Del Norte County shortly after Ephraim Catching's death in 1902. The Cooke family allotment was sold after Minnie died at 104 in the late 1960s or early 1970s, and the family sold the last of their property around 2006, but their descendants remain part of the Indian community today.

Chapter 7: Interpretive Themes

This chapter includes a summary of major research themes that can be addressed by the described archaeological, ethnographic, and historical studies. Tushingham's dissertation (2009) specifically sought answers to two basic questions: (1) how did intensive foraging systems develop in the region (abruptly or gradually)? and (2) when were the two most important dietary staples of ethnographic groups (salmon and acorns) intensified? As the first large-scale effort at any interior river site in northwestern California, the answers to these questions were uncertain at the outset, but became clearer upon investigation.

As with any exploratory research, new questions and issues emerged. The excavation and identification of five semi-subterranean plank houses drove new research to identify the differences between ethnographic and prehistoric households in northwestern California and the Pacific Northwest Coast, and how the evolutionary trajectories of these regions varied. The astonishing amount of obsidian recovered at the project sites—obtained from sources 250-350 kilometers distant directed questions about when and why obsidian distribution patterns varied so dramatically over time. The discovery of the Contact Period sweathouse was also unexpected. Through conversations with Tolowa participants, the historical context of this period shifted the interpretation of the house and associated assemblage. Historical research begun by Maniery and Millett (2008) demonstrated that the earliest non-aboriginal settlers on Hiouchi Flat consisted of large Indian-white households alongside the last permanent inhabitants of Red Elderberry Place. After this discovery, continued historical and archival research of this period led to the conclusion that Hiouchi Flat provided an inland sanctuary for the native and Indian-white families who lived there.

Several important but ancillary questions not detailed here have been addressed, and there is no doubt that additional research issues will be articulated in the future. For example, a gas chromatography-mass spectrometry (GC-MS) analysis of residue extracted from pipes and pipe fragments recovered at CA-DNO-26 and -333 led to the identification of the earliest evidence of tobacco smoking in the Pacific Northwest Coast (Tushingham et al. 2013a). Work on salmon and acorns in northwestern California developed into projects looking at the implications of findings in regional studies guided by human behavioral ecology and hunter-gatherer nutrition data (e.g., Tushingham and Bettinger 2010, n.d.; Tushingham et al. n.d.).

THE DEVELOPMENT OF INTENSIVE FORAGING SYSTEMS

Two explanatory frameworks address the origin and development of intensive foraging systems akin to those observed in ethnographic northwestern California. One argues for a late and rapid development related to an influx of northern Algonquian and Athabascan speaking peoples into the region (migration). The other argues for an earlier, much more gradual development of the ethnographic pattern by resident foragers (in-situ development). The fundamental difference between these models concerns the timing and origin of hunter-gatherer strategies analogous to the ethnographic pattern. Key elements of this pattern include residence in semi-subterranean plank houses within coastal and riverine villages; a highly local social group structure involving household-based social organization and resource ownership; intensive, task-oriented food-getting pursuits; reliance on mass-capture technology and methods such as weir and net fishing; an emphasis on stored foods with high processing costs (e.g., acorn leaching); and concomitant heavy reliance on female labor (processing and other work related tasks associated primarily with women).

The migration concept has its roots in the thinking of Kroeber and early archaeologists, who believed that based on cultural similarities, "the boat-, harpoon-, and dugout canoe-using, gabled plank-dwelling, salmon and sea mammal eating culture pattern of northwestern California must have had its origin farther north in the Northwest Coast culture area proper" (Elsasser and Heizer 1966:227). Excavated coastal sites, including Patrick's Point (CA-HUM-118; Elsasser and Heizer 1966) and *Tsurai* (CA-HUM-169; Elsasser and Heizer 1964), were late dating (mostly post-dating 1000 BP) and contained "evidence of a technology and economy which are, with few exceptions, directly comparable with ethnographic forms" (Elsasser and Heizer 1966:226).

During the mid-twentieth century and later, scholars expanded on the notion of migration, arguing for a rapid and late development of intensive use of the coast, the origin of which is related to an influx of Athabascan (Tolowa, Hupa, Chilula) and Algic/ Algonquian (Wiyot, Yurok) speaking peoples (see Figure 6) into the region from the north, possibly the Columbia Plateau, beginning around 1,100-1,300 years ago (Bennyhoff 1950; Connolly 1988; Golla 2007, 2011; Moratto 1984; Whistler 1977, 1979). Linguistic (glotto-chronological) data was linked with archaeological evidence to reconstruct population movements, explain major developmental shifts in the region, and give estimated dates of these events.

In this scenario, expanding groups originating from the northern Pacific Northwest Coast introduced an intensive maritime and riverine focus to northwestern California beginning around 1100 BP. Once established, this way of life spread quickly throughout the region. According to Whistler (1977, 1979), the earliest inhabitants were Hokan speakers (as were the ethnographic Karuk) who were highly mobile broad-spectrum hunter-gatherers with an interior subsistence focus. The shift to specialized salmon fishing is said to have occurred between 1100 and 900 BP, when river adapted Algic speaking peoples (such as the Wiyot and Yurok) entered the area from the north, again, possibly from the Columbia Plateau. Algic speakers were river adapted, and probably introduced the bow and arrow, simple harpoon, tobacco-smoking and gravepit burning rituals into the area. A final migration at around 700-900 BP marks the entry of Athabaskan groups (including the Hupa, Tolowa and Mattole), also from the north. Athabaskans were adapted to "rough and forested regions" and may have introduced the toggle harpoon and sinew-backed bow. Recently,

Golla (2007) proposed that Whistler's dates were too late to account for regional linguistic diversity. In his reconstruction, the Wiyot settled Humboldt Bay around 1900 BP, the Yurok arrived on the Klamath River between 1300 and 1200 BP, and the Athabaskans settled the Trinity-Eel drainage no later than 1200-1100 BP. Golla suggests that the archaeological complex often referred to as the "Gunther pattern," characterized by flanged pestles, toggling harpoons, zooform clubs, steatite bowls, and wood working tools (adzes, mauls) associated with plank house and canoe building, is not a general Algic phenomenon, postdating Wiyot arrival, and likely associated with the arrival of the Yurok.

Essential to idea of migration is that population movements involved people who "brought with them" the skills and traditions characteristic of the Pacific Northwest Coast (Fredrickson 1984:483). These late arrivals were pre-adapted to intensive maritime and terrestrial resource acquisition and displaced mobile resident groups who up until that time had been "underutilizing the abundant riverine and coastal resources of the region" (Fredrickson 1984:481), marking the beginning of the Gunther Pattern. Once established, this way of life spread quickly throughout the region. If true, the archaeological record should reflect a relatively sudden entry of fishing-related technology, and an abrupt increase in population, with settlement primarily along rivers. These events should have occurred by approximately 1,100-1,300 years ago, with coastal environments being the last areas to settle.

In contrast, in-situ models of development argue for a more gradual, earlier, and local development of the ethnographic pattern (Hildebrandt and Hayes 1983, 1993; Lyman 1991; Lyman and Ross 1988). In this scenario, terrestrial resources were a focus for much of the region's prehistory, first in the interior uplands during Borax Lake times (8000-5000 BP), then at river basin sites beginning at 3000 BP; marine resources are not intensified until population pressure at interior river sites forces people to move to the coast (Hildebrandt and Hayes (1983, 1993). Intensification of marine resources is delayed simply because people chose to focus on highly productive terrestrial resources such as salmon and acorns (Hildebrandt and Carpenter 2007; Hildebrandt and Levulett 1997, 2002). In areas north of Humboldt Bay, such as Point St. George (CA-DNO-11) where there was access to abundant offshore rocks and sea mammal rookeries, people developed the tools and a method of transportation (the "oceangoing canoe-harpoon complex") so they could exploit this rich resource (Hildebrandt 1981, 1984; Jobson and Hildebrandt 1980). This was a local development that "arose out of necessity" rather than one that was introduced to the area.

The most influential in-situ model in northwestern California is articulated in a series of papers by Hildebrandt and coauthors (e.g., Hildebrandt and Hayes 1983, 1993; Hildebrandt and Levulett 1997, 2002, etc.). The model is fundamentally an environmental argument, based in foraging theory, which assumes humans will respond in predictable ways to changes in the natural environment. This model is based largely on findings during a major three-year archaeological project in the mountains of northwestern California, which included excavations at 13 sites in the Pilot Ridge and South Fork Mountain ridge system (elevation 4,500-6,000 feet). The project, which was the first extensive testing of regional sites in non-coastal settings, provided evidence for extensive use of the uplands during Mendocino and Borax Lake Pattern times. The diverse artifact assemblage characteristic of this period led to the interpretation of these sites as multi-purpose camps where a broad range of activities took place. During this time, upland sites were the main use areas of highly mobile hunters and gatherers who concentrated on upland resources, especially acorns and large game. The authors noted a distinct change in artifact

assemblages (less artifact diversity) and site nature (fewer residential, more specialized sites) after 3000 cal BP. They believed this reflected a fundamental change in use of the uplands. Palynological data compiled by West (1989) showed that between 3000 and 6000 BP, the uplands were warmer and resources were richer and more abundant than later in time. Specifically, beginning around 3000 cal BP, conditions became cooler and wetter and oak groves receded, making this important staple less reliable. In short, the uplands were transformed from a homogeneous environment with diverse resources into a relatively resource poor zone. The combined evidence led Hildebrandt and Hayes (1983, 1993) to hypothesize that in response to changing environmental circumstances, there was a shift to lowland river valleys at 3000 cal BP. Seasonal resources were emphasized at this time, in particular salmon and acorns, which involved specialized technology, including acorn processing equipment and fishing-related gear, reduced mobility, and an emphasis on storage. The authors argue that population pressure at interior river sites forced people to settle the coast later.

The migration and in-situ development models offer very different predictions concerning the development of intensive foraging economies in northwestern California. Migration models hold that at approximately 1100 BP, people entered northwestern California who were "preadapted" to intensive resource acquisition and brought with them the skills and tools related to extraction of riverine and maritime resources. Before this time, people were highly mobile, broad-spectrum hunter gatherers with an interior subsistence focus who essentially "underused" the abundant resources of the region, i.e., coastal resources. The in-situ development model also predicts a shift, but it is a much earlier and less abrupt, local development. Acorns and large game are emphasized at upland sites until approximately 3,000 years ago, when people began to settle river basin sites. Subsistence is based on storage and mass capture of seasonal resources such as salmon and acorns.

Thus, the question is, when does evidence for specialized technology (e.g., acorn processing and fishing-related gear), storage, residential features, and an emphasis on mass capture foods occur? Does it appear abruptly at around 1100 BP (migration) or relatively gradually around 3,000 years ago (in-situ development)? As most regional studies have focused on coastal or upland sites, resolution of these explanatory frameworks has remained speculative.

A Rapid, Qualitative Shift

Project findings demonstrate that the in-situ model of north coast subsistence-settlement development is partially correct: there was an increase in the use of lowland river basins during the Middle Period. Acorn processing was important, and residential stability increased after 3100 BP. The Smith River basin was occupied earlier and on a more sedentary basis than predicted by migration models. Evidence for several key foraging strategies predicted by the in-situ development model are absent until the Late Period.

Specifically, there is a lack of evidence at the project sites for logistical resource procurement, large-scale storage, and salmon intensification (technology associated with mass-extractive methods, specialized fishing gear). While limited, faunal data from CA-DNO-26 also suggests salmon intensification was delayed until the Late Period. The evidence suggests that populations grew in situ, a trajectory of gradual development that was not broken until fairly late, an event likely associated with the influx of northern peoples to the region. Foraging strategies intensified (mass extraction of resources, large-scale storage,

and logistical pursuit of resources) by 1250 cal BP. A relatively abrupt expansion of the pattern is consistent with the project findings described here and in Tushingham (2009).

The following sections address some of the fundamental changes that are associated with this adaptive shift, especially in terms of hunter-gatherer subsistence, household organization, and use of exotic obsidian.

THE TIMING AND TRAJECTORY OF SALMON AND ACORN INTENSIFICATION

Salmon and acorns were the most important terrestrial foods in the diet of aboriginal groups in northwestern California in the ethnographic period. Although the central role of these dietary staples is attested to in the ethnography, how and why this may have differed in the past is poorly understood.

Salmon figures prominently in the ethnographic literature as providing the economic foundation of many north Pacific hunter-gatherer social institutions (cf. Goddard 1945; Hewes 1938; Kroeber 1925; Kroeber and Barrett 1960). Likewise, many archaeologists have stressed reliance on (and control over) anadromous fish as being critical to understanding the development of foraging societies where salmon are available in the north Pacific Rim (northern California, Pacific Northwest Coast, Plateau, and interior Alaska and Canada; cf. Hayden 1992; Hewes 1938; Maschner 1998; Matsui 1996; Schalk 1977). The traditional assumption is that salmon is a relatively low-cost, high-ranking resource that would always have been as prominent in the diet as its numbers would allow.

Among historic American Indian groups in northwestern California, acorns were ranked second to salmon. Yet acorns were used by aboriginal groups who "ate very largely" of the nut (Kroeber 1925:84), and intensive processing methods were identical to those found in the rest of California. While heavy ethnographic reliance on acorns in California persuaded scholars that they too were a high-quality resource (Baumhoff 1963; Gifford 1936), Basgall (1987) showed that they were extremely labor-intensive—easy to collect but costly to process—arguing this was why intensification of the resource was delayed in northern California. In this scenario, acorns are high-cost, low-ranking resource that would have entered into the diet only when people were forced to expand their diet breadth.

Although it appears that acorns and salmon were both important resources in the Late Period, there is little archaeological evidence for mass extraction of salmon any earlier. Following the traditional notion that mortars and pestles are associated with labor-intensive flour making and leaching processing methods, while milling slabs and handstones were used to process small seeds and nuts (c.f. Fredrickson 1973; Moratto 1984; Basgall 1987), the presence of mortar bowls and pestles in Middle Period deposits suggests that acorns were an important staple by 3100 BP.

A handful of previous excavations of Mendocino Pattern components at river basin sites in northern California also point to this trend. Hildebrandt and Hayes (1993:103-104) cite examples from Humboldt County (McKee Flat on the Mattole River [CA-HUM-405; Hildebrandt and Levulett 1997] and Redwood Creek [CA-HUM-452; Hayes 1985]), and examples from north central California (CA-SHA-192 [Johnson 1976], CA-SHA-543 [Jenson 1977], and CA-SHA-177 [Johnson and Skjelstad 1974]) as providing "evidence for acorn use and some degree of occupational stability" (dark midden soils and diverse assemblages, including mortar bowls and pestles) but no "direct evidence for the exploitation of salmon or the extensive use of storage facilities." Finally, a region-wide

survey of fish bone recovered from northern California midden sites shows relatively low frequencies of salmon bone, and relatively low intensity of fish use until after 1000 BP (Gobalet et al. 2004).

This appears to be a trend throughout California. Acorn intensification occurs at many sites by 6000 BP, and is widespread between 4000 and 3000 BP. In the San Francisco Bay Area, acorn is intensified in many places by as early as 5000 years ago and is widespread between 3000 and 2500 BP. Finally, acorns are intensified at some sites in the north Coast Ranges between 7,000 and 5,000 years ago, and at most sites in northwestern California by about 3500 BP (Tushingham and Bettinger n.d.). While the timing is variable, the sequence is the same throughout northern California, with acorns intensified before salmon. If salmon are traditionally viewed as a low-cost (high-ranking) resource, while acorns are viewed as a high-cost (low-ranking) food, why are salmon not taken and stored en masse earlier?

Why Foragers Choose Acorns before Salmon

Mass extraction and storage of salmon was resisted partly because of the high costs associated with such techniques. More to the point, foragers had an attractive alternative, acorns, which are a less risky, more flexible resource. Salmon, when taken with high-cost *techniques*, is an extremely "front-loaded" resource, compared to acorns, which is a "back-loaded" resource (Bettinger 1999a, 1999b, 2009). Fish, game, and most roots are front-loaded because they are expensive to procure and process on the "front end" (before storage), but once stored, do not take a great deal of time to prepare before being consumed. Salmon are front-loaded because a great deal of time is required to capture, prepare, and dry them before storage. This is particularly true when taken with nets and other complex technology, which, may increase yields substantially, but take a great deal of time to make and maintain. Weirs also involve a great deal of upfront costs, including weir construction and coordination. Storage of expensive technology (e.g., nets) and processed fish would have been very risky for foragers where the potential for loss of labor and capital would have been high without permanent storage facilities. In pre-Late Period times, when groups were still quite mobile, food storage likely involved "caching," a strategy involving smaller stores of food in a broad range of places throughout a group's foraging radius. Back-loaded resources are much less risky for caching, particularly for more mobile foragers who may or may not return to caches, because not a lot of effort is lost if the cache is not used (Bettinger 1999a).

Back-loaded resources (e.g., acorns and piñon nuts) are comparatively simple to procure and store, but a great deal of effort is involved in processing them before consumption. Acorns, for example, can be collected and stored easily, but processing time, particularly when intensive leaching techniques are employed, are extremely costly. Acorn is "backloaded in the extreme, storage time constituting just six percent of its total handling time (McCarthy 1993:Table 5-2)" and preparation taking up the remainder (Bettinger 1999a:53). Though quantitative estimates of handling time for salmon can vary significantly according to technology, species, etc. (Lindström 1996), when mass harvested, stored, and dried, it can be reasonably said that salmon were as front-loaded as acorns were back-loaded.

As pointed out by Schalk (1977), due to the stretched out anadromous fish season, there were likely fewer scheduling demands in California with salmon than in the northern Pacific Northwest Coast. However, though there are many scales of variability with intensive salmon fishing—from large communal weirs to small-scale family endeavors

more characteristic of California—it remained an "either-or" proposition throughout the region. Mass extraction of salmon was resisted in northwestern California because it is acutely front-loaded when taken with high-cost techniques. Rather, low-cost salmon fishing techniques were emphasized early in time. Foragers seem to have chosen to intensify acorns before salmon because, as a back-loaded resource, acorns are a less risky and more flexible food (Tushingham and Bettinger 2010, n.d.).

"Cheating at Musical Chairs"

The Middle Period system of subsistence worked well, but this in-situ development was abruptly altered at around 1250 cal BP, when the rise of linear plank house villages is documented at river basin sites. Migrating groups originated where the use of salmon required mass-harvesting techniques and sophisticated technology, and these strategies were applied locally. Intensive foraging strategies developed and spread quickly due to the competitive advantage of sedentary groups laying claim to productive resource patches. Once the qualitative jump was taken, other front-loaded resources (smelt, sea mammals, pelagic fish, etc.) could enter the diet with a minimum of additional risk.

Prior to Algonquian and Athabascan entry, northwestern California was inhabited by foragers who were engaged in high-cost acorn processing for thousands of years. This in-situ development was abruptly overtaken by 1250 cal BP. It is unlikely that it was a lack of information or sufficient technology that kept foragers from taking the qualitative jump into intensification of front-loaded resources. Rather, pre-Late Period foragers chose a less risky, more flexible path. In-situ groups were not "underusing" the rich northwestern California resource base; they were following a qualitatively different adaptive strategy. Thus expanding groups did not necessarily introduce unknown methods and technology, but their arrival did set the wheels in motion for a rapid expansion of a fundamentally different pattern.

An apt analogy for sedentism is "cheating at musical chairs—refusing to get up when the (seasonal) music starts" (Rosenberg 1998:660). Groups with plank houses, which function as large permanent storage facilities, were significantly invested in high-cost strategies focused on front-loaded resources (including mass extraction of salmon) and suddenly began "cheating at musical chairs." Decreased mobility allowed these groups to control a limited number of patchy resources. In a context of increased competition for limited resources, territorial groups who laid claim to productive patches enjoyed a competitive advantage over adjacent groups. Essentially, the rules had changed, creating a context of increased competition for a limited number of resource patches. Such patches would have been difficult to defend for resident groups, who would have been under acute pressure to either adopt some or all of the cultural practices or be displaced.

The Late Period shift to plank houses, storage facilities, and emphasis on front-loaded resources involved a rapid and widespread qualitative shift that cross-cut linguistic boundaries. Growing demographic pressure (exacerbated as additional groups "wedged" themselves into the area) led to settlement of new patches, a complicated history of movements that undoubtedly contributed to the amazing diversity of languages in the area. A developing sense of resource ownership may be tied to this process. In an area where small family groups owned a limited number of productive resource patches, access to valuable salmon fishing spots would have been an additional limiting factor. For example, access to productive fishing patches likely decreased as ownership increased over time. While salmon can be taken wherever they are present within a watershed using low-cost

techniques, there are only a limited number of places suitable for mass extraction of the resource: "Environmental factors making some localities suitable for building weirs or setting gill nets consisted of special combinations of depth of water, current speed, type of bottom. Such places were infrequent" (Drucker 1983).

Though the migration theory emphasizes the effect of the Pacific Northwest Coast on northwest California society, local influences strongly affected what was likely a very complex process. A highly efficient mode of hunting and gathering was already in place, one that emphasized less risky back-loaded resources. The trajectory of intensification in northwestern California was influenced by the tradition of small groups and emphasis on extraction of back-loaded resources, which were probably viewed as privately owned goods. The system was small, efficient, and highly resistant to freeloaders and top down labor demands. Women's labor was highly valuable in this system. Northwestern California maintained its distinctive Californian flavor and developed along a trajectory unique within the Northwest Coast. As Kroeber (1925) put it, northwestern California "society follows the aims of the societies of the North Pacific Coast with the mechanism of middle California."

Coastal Correlates

Recent work at sites on the coast of Del Norte and Humboldt counties suggest a similar restructuring in use of coastal environments after about 1,300 years ago. For example, in recent fieldwork at Point St. George (CA-DNO-11), Whitaker and Tushingham (2011) found some of the earliest evidence to date of intensive use of this area of the coast, with archaeological deposits containing significant shell midden, a wide variety of marine resources, and plant processing equipment radiocarbon dated in levels dating to 1137 and 1214 cal BP.

Another key site is CA-HUM-321, a deeply stratified site owned by the Blue Lake Rancheria in Manila on Humboldt Bay, which has possibly the earliest evidence of smelt fishing and intensive shellfish procurement on the North Coast of California. The diversity of remains, including stored resources such as smelt, indicate that CA-HUM-321 represents midden associated with a residential base. All levels, including basal levels dating to as early as 1307 cal BP contain a wide variety of foods and provide evidence that the mass harvest and bulk storage of small forage fish was an important procurement strategy by the early Late Period (Tushingham 2011).

These studies suggest that people were engaged in logistical and storage strategies of intensive shellfish procurement, marine mammal hunting, and fishing of mass-harvested species (smelt, salmon) on the coast by 1,100-1,300 years ago. Future work from well-dated deposits predating this period is essential to better understand hunter-gatherer subsistence-settlement trends on the coast. People living in interior zones were more terrestrially oriented (i.e., there was more evidence for exploitation of interior nuts and salmon than for marine foods), but organizationally, the shift was identical: once people begin to live in large, permanent plank house villages on the coast and along rivers, diet breadth expands, and they begin storing a variety of foods (many of which are logistically procured and mass harvested from distant locations) at their home base.

OBSIDIAN DISTRIBUTION PATTERNS

Understanding inter-regional exchange systems and how they changed through time is an important research issue which can be linked to a series of significant socioeconomic developments in the prehistoric record, including those related to changes in mobility, ethnic boundaries, and territorial circumscription. Although the exchange of exotic items is often difficult to document due to problems of preservation, durable items such as obsidian provide an important indicator of this type of activity.

Tracking changes in obsidian toolstone use is particularly valuable when diachronic evidence is available. In northwestern California, rivers were major corridors for inter-regional exchange of exotic goods, including obsidian toolstone. Obsidian was obtained from several sources, including the closest source, Medicine Lake Highlands, which is located more than 250 kilometers from the project area (see Figure 17). Patterns of obsidian exchange changed through time, possibly in tandem with key socioeconomic developments in the region.

Diachronic Variation in Obsidian Abundance, Source Use

Patterns of obsidian exchange can be discerned at several sites, sometimes over several thousands of years. Sites CA-DNO-26, -332, and -333 have yielded high frequencies of obsidian flaked stone, up to 60-70% of lithic material, compared to the 0.5% to 5% typically recovered at upland and coastal sites in the region.

Lithic assemblages are characterized by component through flaked stone analysis, and components are compared between and within sites over time. Components and recovered obsidian artifacts are dated via obsidian hydration, associated radiocarbon analysis, and/or cross-dating of diagnostic artifact forms, and obsidian is sourced to its place of origin via X-Ray Florescence (XRF) or Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS). These data sets are then compared to similar data from other regional sites to gain an understanding of broad-scale changes in inter-regional exchange.

To understand obsidian source use, a sample of 382 obsidian tools and debitage from five sites in the project area was sourced using XRF and LA-ICP-MS (Table 20).

There is a great deal of diversity in the obsidian source assemblage, ten sources being represented, though most samples derive from either the Medicine Lake Highlands of north central California, in particular the LIW source (approximately 200 kilometers distant), and Spodue Mountain in the Klamath River Basin of south central Oregon (300 kilometers distant; see Figure 17). Interestingly, the only obsidian derived from distant California sources, Sugar Hill and Buck Mountain obsidian from the Warner mountains of northeastern California, was recovered in either Early or Contact Period deposits. Specimens associated with the Contact Period sweathouse at CA-DNO-26 include a miniature "socioceremonial" blade derived of Buck Mountain obsidian (not submitted to hydration analysis) and a specimen derived from Sugar Hill (1.8 microns). The only other northeastern California obsidian from Sugar Hill is from an Early Period deposit at CA-DNO-XX13, and includes a specimen from Buck Mountain (5.90 microns; catalog number REWD-00284-1), and Sugar Hill (with two readings of 5.55 and 7.73 microns; catalog number REWD-00284-4).

There are multiple lines of evidence showing that obsidian source use changed significantly through time. As many different sources are represented and may hydrate at different rates, it is important to carefully examine the evidence.

Table 20. Cross-Site Obsidian Source Frequency.

Source	Site (CA-DNO)					
	-26	-332	-333	-334	-XX13	Total
Medicine Lake Highlands						
Medicine Lake Highlands*	2	51	-	5	5	63
Lost Iron Wells	118	21	35	-	-	174
Callahan	-	-	1	-	-	1
Glass Mountain	1	-	-	-	-	1
Railroad Grade	1	-	-	-	-	1
Yellow Jacket	1	-	-	-	-	1
Subtotal	123	72	36	5	5	241
Northeast California						
Buck Mountain	1	-	-	-	1	2
Sugar Hill	1	-	-	-	1	2
Subtotal	2	-	-	-	2	4
Borax Lake	-	1	-	-	-	1
Oregon						
Spodue Mountain	79	35	6	3	1	124
Silver Lake/Sycan Marsh	5	5	-	-	-	10
Subtotal	84	40	6	3	1	134
Unknown	-	1	1	-	-	2
Total	209	114	43	8	8	382

Notes: * Samples sourced using XRF that were too small to be sub-sourced but determined to be derived from Medicine Lake Highlands.

In the simplest comparison, the two most frequently used sources, LIW and Spodue Mountain, are compared by plotting the distribution of micron readings of each source (Figure 49 and Figure 50). The Spodue Mountain distribution has a peak between 3.6 and 5.1 microns, which accounts for 60% of the total Spodue sample, whereas the LIW distribution is more spread out with several peaks between 1.0 and 2.6 and a distinct peak between 4.4 and 5.1 microns. Overall, 74% of Spodue Mountain is greater than 3.6 microns, opposed to 54% for LIW.

A Kolmogorov-Smirnov Test (Smirnov 1939) was employed to test the null hypothesis that there is no significant difference between the distribution of micron measurements between Spodue Mountain and LIW obsidian. As the observed maximum difference (.20) between the cumulative proportions of Spodue Mountain and LIW obsidian is greater than the minimum required (0.12), the null hypothesis is rejected at the .05 level.

If the two sources hydrate at the same rate, then the observed difference would be due to differing use of the two sources through time. Before this conclusion can be reached, however, it must be shown that LIW and Spodue Mountain obsidian do hydrate at the same rate. Previous studies indicate that they either do not differ significantly or that Spodue Mountain hydrates at a slightly lower rate than LIW. Based on findings at sites in southwest Oregon, Pettigrew and Lebow (1987) proposed that Spodue Mountain and Silver Lake/Sycan Marsh obsidian hydrate at a similar rate to Grasshopper Flat/LIW/Red

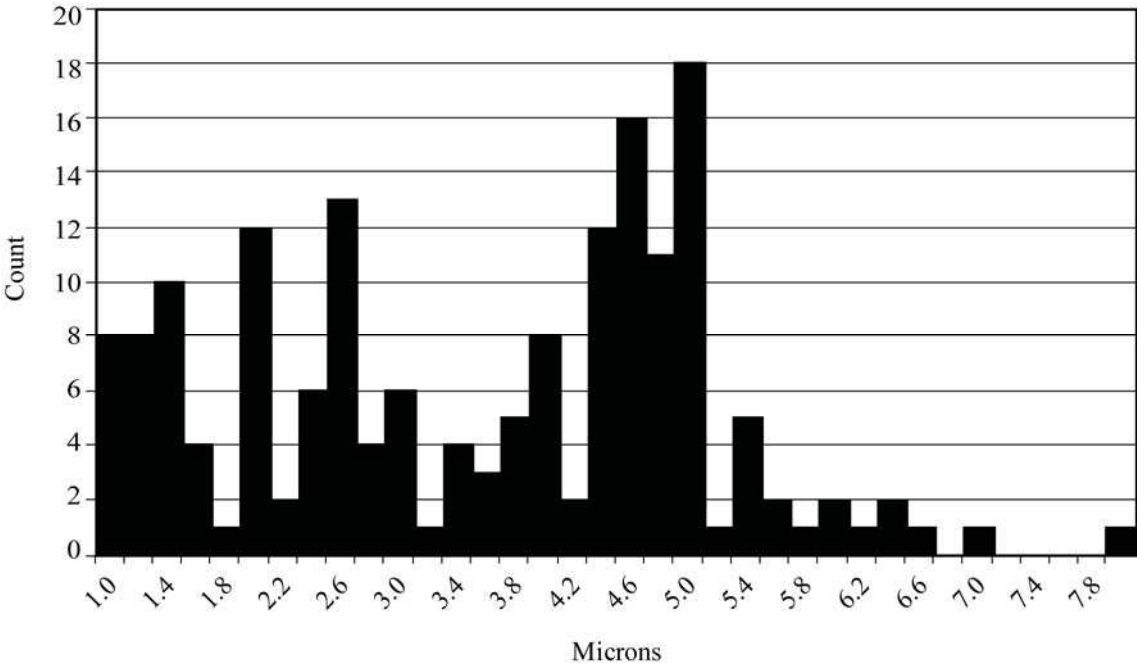


Figure 49. Lost Iron Wells (LIW) Obsidian Frequency by Microns.

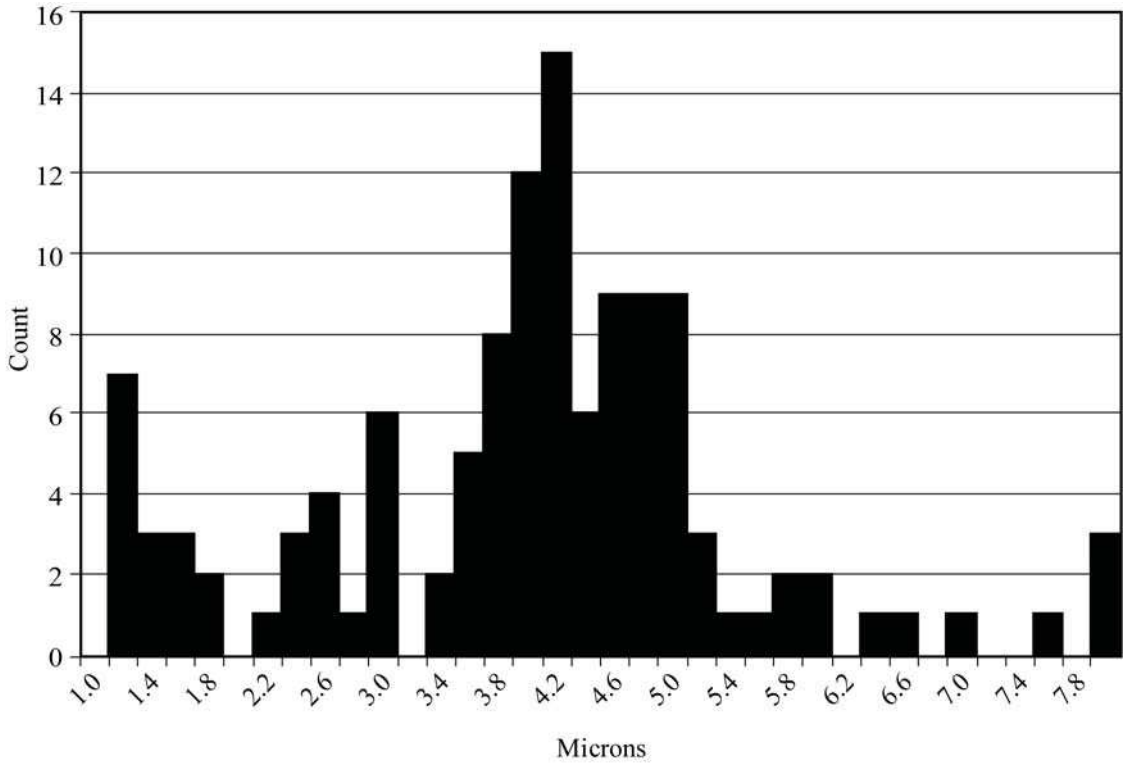


Figure 50. Spodue Mountain Obsidian Frequency by Microns.

Switchback obsidian, and Connolly et al. (1994) proposed a "project vicinity" multi-source hydration rate of 4.1 μ^2/1,000 years for both sources. Findings at CA-DNO-332 suggest that Spodue Mountain hydrates at a slightly slower rate than LIW obsidian (Hildebrandt in Tushingham et al. 2008), which makes the observed trend even more robust.

By dividing the entire sourced and hydrated obsidian sample, regardless of micron reading, into excavated components, it is possible to compare temporal trends in the proportion of all California sources to that of Oregon sources (Figure 51). Again, there is a strong relationship between Oregon sources and chronology, where more distant (Oregon) obsidian is used earlier in time.

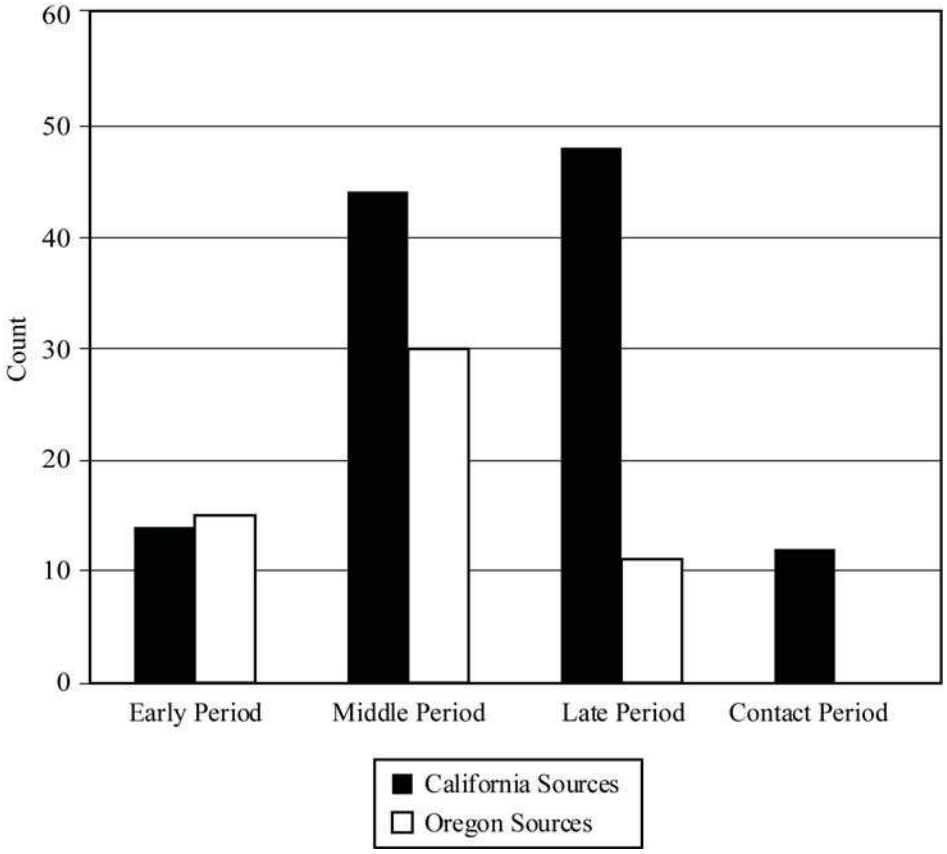


Figure 51. Obsidian Source Use by Excavated Component:
Sites CA-DNO-26, CA-DNO-333, and CA-DNO-XX13.

In sum, XRF and LA-CI-PMS sourced obsidian shows that foragers obtained their obsidian from a variety of distant sources in California and Oregon. However, when the sourcing and hydration data are combined, a clear pattern in obsidian source use over time emerges. In excavated Early and Middle Period components dating to between 8500 and 1500 cal BP, obsidian accounts for 83-61% of debitage at the project sites. Source diversity is characteristic of this time period. Foragers obtained their obsidian from both California and more distant sources in Oregon. About 45% of the total sourced obsidian sample comes from distant (300-kilometer) Oregon sources, while the remainder derives from closer (200-

kilometer) California sources. After 1500 cal BP, there is much less obsidian debitage (39% of total debitage), fewer obsidian tools, and most obsidian derives from California sources (84%). In the Contact Period, all obsidian derives from California sources.

The Late Period decrease in obsidian debitage, decrease in source diversity, increase in core technology, and focus on fewer and more local sources is coterminous with the rise of linear plank house villages on the river sites. The obsidian is but one measure of the dramatic social changes that took place. We also see clear evidence for logistical pursuit of resources, the development of large storage facilities, and a focus on mass-extractive methods and technologies. Such change is indicative of the developing insularity of social groups and increased sedentism characteristic of the Late Prehistoric. The restructuring of long-distance exchange relationships was clearly related to this development and may be associated with territorial circumscription, or a decreased ability to trade and/or travel freely after this time.

PERSISTENCE IN THE AFTERMATH OF THE CALIFORNIA GOLD RUSH AND BEYOND

The effects of Euro-American contact on indigenous populations were devastating, particularly during the Gold Rush era, which began circa 1851-1852 in northwestern California. At least four major Tolowa villages suffered horrific massacres in the 1850s, when hundreds of people were killed and their villages burned. These events, along with forced removals, disease, and loss of traditional lands, led to a population crash from approximately 2,600 to 4,000 Tolowa in pre-contact times to 316 in 1856, 200 in 1870, and 121 by 1910 (Baumhoff 1963:231; Cook 1956:101; Kroeber 1925:883; Thornton 1980:703).

Despite such circumstances, many aspects of traditional culture did survive. Some villages were resettled after the massacres and were occupied into the twentieth century. Though many traditions (such as major dances and ceremonies, including Nedosh), vanished from public view to escape persecution, they merely went underground and persist to this day. How northwestern California Indians survived during this period is an important research topic, and has been a theme in the writings of several authors (Bommelyn n.d.; Collins 1998; Madley 2011; Reed 1999; Slagle 1985; Thornton 1980, 1984; Tushingham 2005, n.d.a, n.d.b).

Continuity, Survival, and Adaptation at Red Elderberry

While population and settlement range was severely reduced, remnant populations continued to engage in traditional lifeways at particular sites, including Red Elderberry Place. The Contact Period house excavated at CA-DNO-26 provides a window into how native groups lived and survived during an extremely turbulent time in American history (Tushingham 2005, n.d.a, n.d.b). Early anthropologists would have immediately recognized the house as a traditional northwestern California men's plank sweathouse, a unique house form in the Americas. Aspects of the excavated house and its associated assemblage speak to our concept of traditional or "classic" northwestern California aboriginal lifeways; for example, wealth and status correlates suggest the owner of the house would have been considered a wealthy man by other Indians, and that house inhabitants ate similar foods and hunted and fished with the same technology described in ethnographic accounts of Indian groups living in the area.

The house assemblage consists of a diverse array of Euro-American materials and artifacts which bear striking similarity to the site's Late Prehistoric assemblage. In fact, if one were to remove the historically introduced items of metal, porcelain, and glass from the Contact Period assemblage, it would be practically impossible to tell it apart from the Late Period site assemblage.

Euro-American materials that were found in the house include clothing items (buttons, hose clasp, a ring), ammunition, mining tools, and historically introduced foods. Historic glass was incorporated and used like other toolstone; the historic glass assemblage includes glass bifaces, endscrapers, flake serrates, retouched flakes, used flakes, and a black glass microblade core. As the glass assemblage mostly consists of debitage, tools, and broken and incomplete bottle fragments, it seems that the glass was largely used in a traditional, "Indian" way (i.e., for toolmaking) as opposed to being glass associated with dishware, serving plates, and the like.

One of the more striking findings suggested by the artifact assemblage is the wide variety of hunting and fishing techniques employed. The presence of stone projectile points and ammunition indicates that people hunted with both bow and arrow technology and shotguns. Fishing techniques apparently included both the mass harvest of migratory species with nets and the capture of individual fish with harpoons and hook-and-line technology. Marine mammal hunting is suggested by the presence of a single large triangular concave-based harpoon tip; in ethnographic northwestern California these points were widely used as tips for composite harpoons in sea mammal hunting.

There is evidence that people continued to adorn themselves with traditional "Indian" items and symbols of wealth (marine shell beads, ocher paint, the obsidian blade), while also wearing Euro-American clothing (buttons, hose clasp). Perhaps these items were worn at the same time, or they may have been worn in different contexts or under different circumstances (i.e., "Indian" garb for dances and ceremonies, "Euro-American" clothing when interacting with or working for whites). Such "identity switching" may have been a necessary aspect of survival while living on the edge of the dominant white society.

The research demonstrates continuity and persistence of traditional lifeways despite the impact wrought by the arrival of the Euro Americans. The house and its contents demonstrate clear continuity with earlier periods of time. Overall, it appears that site inhabitants incorporated historically introduced materials, technology, foods, and possibly new forms of labor, into their traditional cultural system.

An Inland Sanctuary

The remarkable survival (and renaissance) of Tolowa culture has been a theme in the writings of several authors (Bommelyn n.d.; Collins 1998; Reed 1999; Slagle 1985; Thornton 1980, 1984; Tushingham 2005, n.d.a, n.d.b). While every survivor's story was different, and sheer luck undoubtedly played a role in the survival of many, according to oral histories, many Tolowa survived simply by taking refuge in the inland mountains to flee violence near Crescent City during the height of the massacres (Thornton 1980, 1984; Tolowa Language Class 1972). For example, at the time of the massacres, several Tolowa from coastal villages moved to Mill Creek, located across the river from CA-DNO-26, "to wait until things died down" (Thornton 1980). In the years following, some Tolowa villages were resettled and several continued to be inhabited into the twentieth century. This was an

extremely tenuous existence, however. Native people had to navigate a landscape where violence was common (e.g., scalpings, killings) and there was a high risk of detainment by local enlisted brigades who held regular reservation roundups (Madley 2011).

Despite the great social upheaval of the mid to late 1800s, the archaeological evidence described above suggests that not only did people persist in living at Red Elderberry, they also continued to live much the way they had before white contact. Persistence of Red Elderberry inhabitants during this time can probably be attributed to a combination of factors that are expanded upon in Tushingham (n.d.b). Certainly, the area seems to have been an inland sanctuary of sorts. The site is located about eight linear miles from the major white settlement at Crescent City. The Hiouchi area may have provided a safe haven for Red Elderberry inhabitants, who were close to, and perhaps part of, a marginal multi-ethnic community that was, socially and physically, on the fringe of the dominant settler community.

Census records demonstrate that at least two "mixed" families consisting of white men and their Indian wives and children—the Catchings and the Cookes—were firmly entrenched in the immediate area as early as the 1860s (Maniery and Millett 2008; Tushingham n.d.a, n.d.b). Though the nature of these interactions is unknown, these neighboring households were likely friendly to, or at least tolerant of the Indian people living in the traditional houses at Red Elderberry. People clearly relied on traditional means of subsistence to survive, while adapting and "making do" through cultural flexibility. For example, sweathouse inhabitants may have provided labor for the neighboring settler community, perhaps even working at small mining operations in the area. It seems likely that people may have hid or downplayed their Indian identity under certain circumstances.

ARCHAEOLOGY AND ANTHROPOLOGY

Much of what we know about Indian groups in western North America was recorded by early twentieth century anthropologists who conducted Boasian "salvage ethnography" to record details about rapidly disappearing aboriginal lifeways. In northern California, these studies began at the tail-end of a fifty-year period of extreme population decimation and upheaval which commenced with the California Gold Rush (Figure 52). Even before these events, native people suffered waves of disease that altered populations to an as yet unknown degree (Erlandson and Bartoy 1995, 1996; Platt 2011).

While many ethnographic consultants were survivors of the Gold Rush era, or their direct descendants, little was recorded about how Native peoples survived and responded to historical events. This was because the focus of this work was to record "pure" pre-contact aboriginal lifeways, an approach that attempted to separate aspects of "traditional" Native American society from historical events and influences. Because of this, early anthropologists, in particular A.L. Kroeber, have been accused of ignoring the realities and shattered existence of the Indian people they studied (c.f. Buckley 1989a, 1989b, 1996; Platt 2011; Scheper-Hughes 2001, 2002, 2003).

Archaeologists in northwestern California have always heavily drawn on the ethnography in their interpretation of the past. Clearly, this study is no exception to this tradition. Yet there is a growing recognition in archaeology of the enormous social upheaval that took place immediately preceding the ethnographic period and the need to better

Courtesy of the Phoebe A. Hearst Museum of Anthropology and the Regents of the University of California — Pliny E. Goddard (15-3318).
Photo by Pliny E. Goddard, the first academic anthropologist to work in Tolowa country. Goddard collected vocabularies and stories from Tolowa residing at coastal villages, including Yontocket, which was the center of the Tolowa world and, fifty years prior, had been the site of the "Burnt Ranch" massacre.

Figure 52. Mary Grimes, Clara La Fountain, Lizzie Grimes, and Bertha Stewart at "Burnt Ranch" (*Yontocket*), 1903.

understand how these events may have altered indigenous populations, land use, and subsistence patterns (e.g., Erlandson and Moss 1997; Tushingham 2005, n.d.a, n.d.b; Tushingham and Bencze 2013; Whitaker and Tushingham n.d.).

Alterations in Land Use, Subsistence Patterns

In the case of Tolowa, the Contact Period villages and settlement patterns recorded in the ethnography were partly the consequence of a greatly shifted social landscape. Twentieth-century ethnographic literature characterizes the Tolowa as largely a coastal folk who regarded the interior as a "hinterland," a place people visited to exploit seasonal resources such as salmon and acorns, but returned shortly afterwards to coastal villages: "Except for occasional forays by individuals or families to hunt and fish, and the fall acorn

and salmon harvest, most of the Tolowa hinterland remained unused and unoccupied most of the time" (Gould 1975:164).

Though the ethnographic literature clearly portrays the Tolowa as a coastal people, river environments seem to have been more heavily occupied in the past, and may have even been a focus of activity at certain points in time. The mounting archaeological evidence demonstrates that there were many major inland sites along the Smith River that were not recorded ethnographically. For instance, the only village recorded ethnographically in the project area is *Chvn-su'lh-dvn* (Red Elderberry; CA-DNO-26), a place with a handful of houses that is regarded as a minor settlement or suburb of a major town on the coast (Drucker 1937). Contact Period site deposits are limited to a relatively small area; the sweathouse (House 4) excavated in the easternmost limits of CA-DNO-26. This is consistent with ethnographic description of the site being a minor settlement or "suburb" by Drucker (1937).

However, it is abundantly clear from the archaeological evidence that this section of the Smith River was heavily used aboriginally, particularly during the Late Prehistoric. While sites documented in the project area with prehistoric components include CA-DNO-26, -332, -333, -334, -339, and -XX13, evidence of Contact Period settlement is only confirmed at CA-DNO-26. The disjuncture between the ethnographic and archaeological records is likely because this area suffered a collapse in the Late Prehistoric period, possibly caused by the combined effects of the mid-nineteenth century California Gold Rush.

Recent studies at sites on the Tolowa coast are attempting to grapple with these issues. In recent study of coastal subsistence at two sites at Point St. George (CA-DNO-11 and -13), Tushingham and Bencze (2013) found that the site's Late Period component was largely consistent with the ethnoarchaeological model that Gould (1966, 1975) constructed about sedentary Tolowa villages and hunter-gatherer organizational strategies. Similarly, in a quantitative reassessment of Gould's (1966) data at Point St. George (CA-DNO-11), Whitaker and Tushingham (n.d.) confirmed that prehistoric Tolowa villages were organized into distinct habitation and workshop areas, as they were ethnographically.

Certain aspects of the archaeological record are incongruous with the ethnography. For example, Tushingham and Bencze (2013) found that certain foods may have been more important than portrayed in the ethnography (e.g., artiodactyls and small intertidal fish), while others may have been less so. Specifically, there were surprisingly low numbers of acorn shell and salmon bone in fine-grained samples, a finding that is inconsistent with the notion that these two mass-harvested and stored foods were primary staples. While these foods were clearly important to coastal groups historically, we argue that access to inland locations may have simply been not as free in the past as it was ethnographically. Simply put, populations were likely more packed together before the Tolowa suffered massive population losses and upheaval at contact, so it is possible the landscape may have been more constrained in the past. Future studies in partnership with the Tolowa community may help us to better understand these dynamics.

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